GROUP 55A

HEATER, AIR CONDITIONER AND VENTILATION

CONTENTS

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SERVICE SPECIFICATIONS

M1551000300181

Item		Standard value
Idle speed r/min (N or P range)		700 ± 50
Idle-up speed r/min (N or P range)		850 ± 100
Resistor resistance (for blower motor) Ω	Between terminal Nos. 2 and 3	2.45
	Between terminal Nos. 1 and 2	0.95
	Between terminal Nos. 2 and 4	0.27
A/C compressor air gap mm		0.25 – 0.5
A/C refrigerant temperature switch operating temperature °C	2 Ω or less	less than 130
	No continuity	130 or more (up to 100°C when temperature drops)

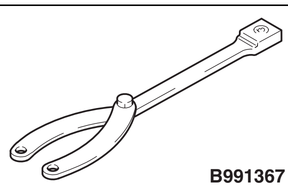
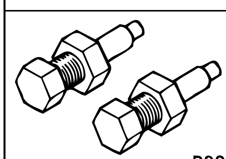
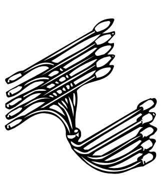
LUBRICANTS

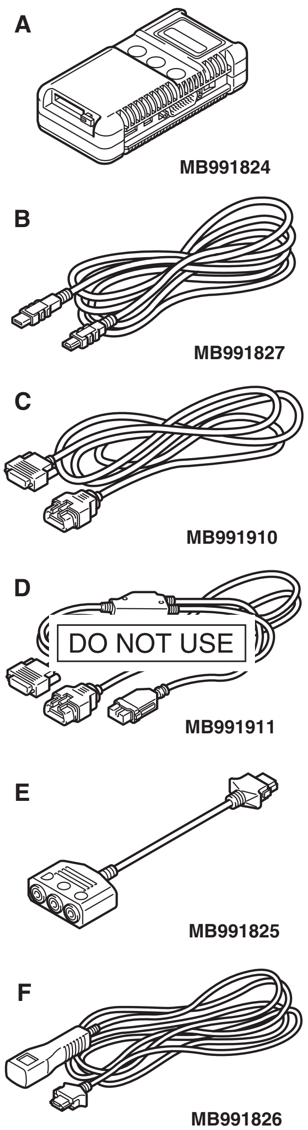
M1551000400166

Item	Specified lubricant	Quantity
Compressor refrigerant unit lubricant cm^3	SUN PAG 56	140 ± 10
Each connection of refrigerant line	SUN PAG 56	As required
Refrigerant g	HFC134a (R134a)	550 ± 20

SPECIAL TOOL

M1551000600137

Tool	Number	Name	Use
 B991367	MB991367	Special spanner	Removal and installation of A/C compressor armature mounting nut
 B991386	MB991386	Pin	
 MB991658	MB991658	Test harness	Inspection of the A/C pressure sensor

Tool	Number	Name	Use
 MB991955	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly A: Vehicle Communication Interface (V. C. I.) B: USB cable C: M.U.T.-III main harness A (applicable to vehicles with CAN communication) D: M.U.T.-III main harness B (applicable to vehicles without CAN communication) E: Measurement adapter F: Trigger harness	Check the A/C (The M.U.T.-III diagnosis codes display, service data display and actuator test) ⚠ CAUTION **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.**

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TROUBLESHOOTING

DIAGNOSIS TROUBLESHOOTING FLOW

M1554004700232

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-12.

DIAGNOSIS FUNCTION

M1554004800251

HOW TO READ DIAGNOSIS CODE

Connect the M.U.T.-III to the 16-pin diagnosis connector to read diagnosis code (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-12).

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-12.

DIAGNOSIS CODE CHART

M1554004900377

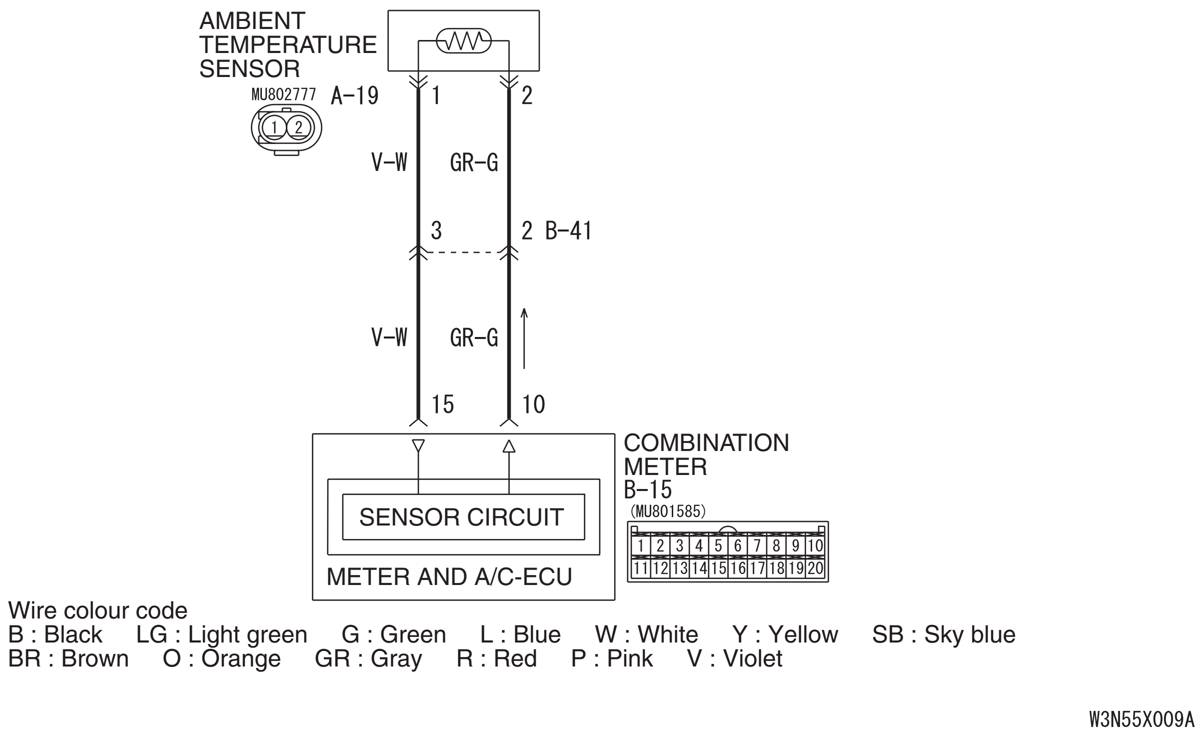
Code No.	Diagnostic item	Reference page	Service data display contents when diagnosis code is set
B1011	Ambient temperature sensor system (short circuit)	P.55A-6	20°C
B1012	Ambient temperature sensor system (open circuit)		
B1021	Air thermo sensor system (short circuit)	P.55A-8	–6°C
B1022	Air thermo sensor system (open circuit)		
B1082	Automatic/manual types abnormal error	P.55A-9	–
U1073	Bus off error	Refer to GROUP 54A, COMBINATION METER P.54A-31	–
U1100	Engine-CVT-ECU time-out		
U1101			
U1102	ABS-ECU time-out		
U1106	EPS-ECU time-out		
U1109	ETACS-ECU time-out		
U1120	Failure information on engine-CVT-ECU (related to engine)		
U1206	Flag invalid		

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DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No. B1011,B1012: Ambient temperature sensor system

Ambient Temperature Sensor Circuit



DIAGNOSIS CODE SET CONDITION

This code is set when the ambient temperature sensor circuit is open (Code No.B1012) or is short (Code No.B1011).

POSSIBLE CAUSES

- Malfunction of the ambient temperature sensor
- Damaged the wiring harness and connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III data list

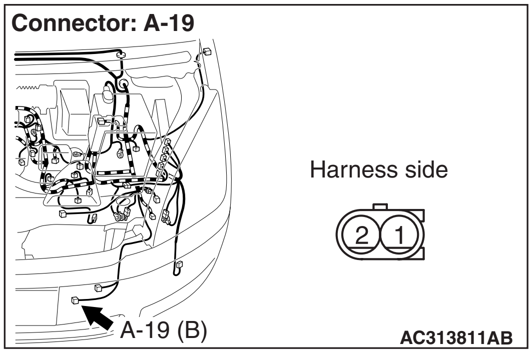
Check that the following service data display contents are normal. (Refer to P.55A-44.)

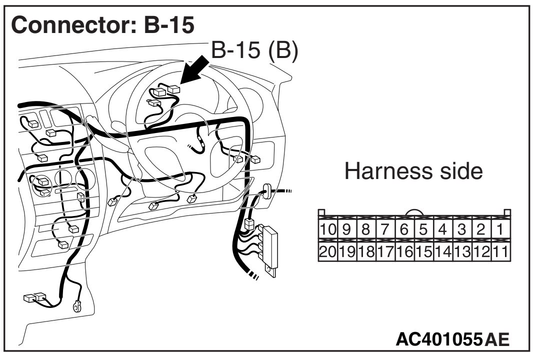
- Item 02: Ambient temperature sensor

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 2.

Step 2. Connector check: A-19 ambient temperature sensor connector and B-15 combination meter connector

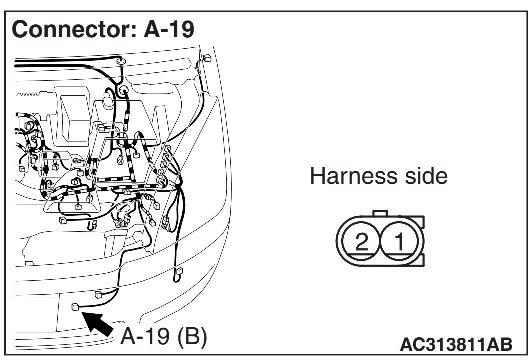


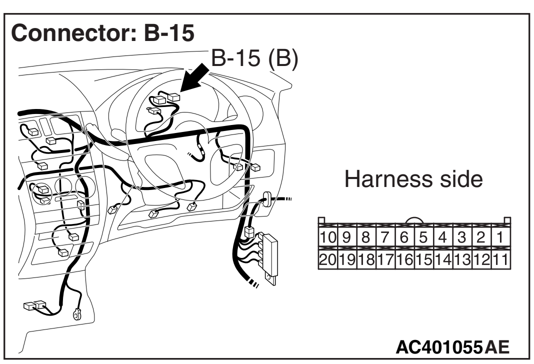


Q: Is the check result normal?

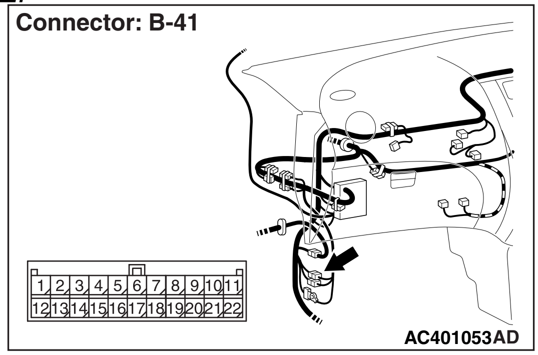
YES : Go to Step 3.
NO : Repair the connector.

Step 3. Check the wiring harness between A-19 ambient temperature sensor connector (terminals 1 and 2) and B-15 A/C-ECU connector (terminals 15 and 10).





NOTE:



Prior to the wiring harness inspection, check intermediate connector B-41, and repair if necessary.

- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the wiring harness.

Step 4. Check the ambient temperature sensor.

Refer to P.55A-62.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the ambient temperature sensor.

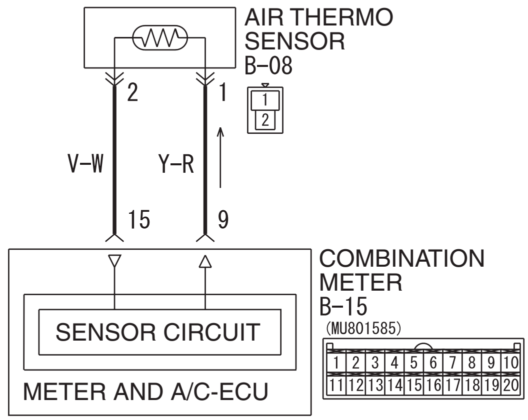
Step 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code set?

YES : Replace the combination meter (meter and A/C-ECU).
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

Code No. B1021,B1022: Air thermo sensor system

Air Thermo Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3N55X010A

DIAGNOSIS CODE SET CONDITION

This code is set when the air thermo sensor circuit is open (Code No.B1022) or is short (Code No.B1021).

POSSIBLE CAUSES

- Malfunction of the air thermo sensor
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III data list

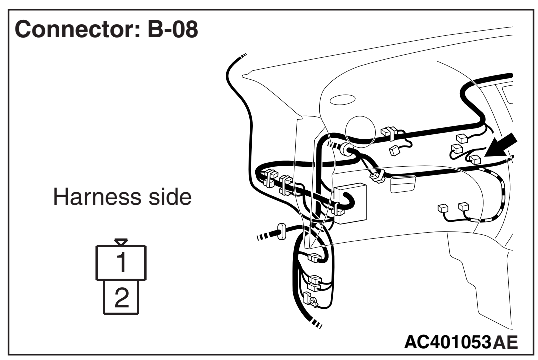
Check that the following service data display contents are normal. (Refer to P.55A-44.)

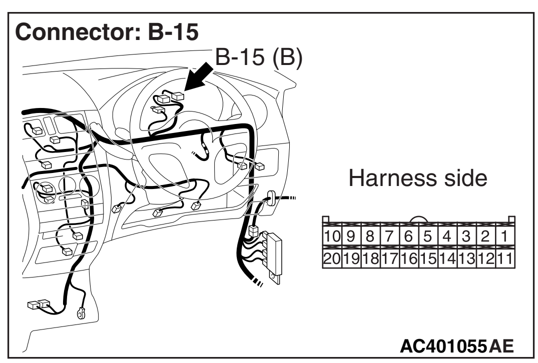
- Item 03: Air thermo sensor

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 2.

Step 2. Connector check: B-15 combination meter connector and B-08 air thermo sensor connector



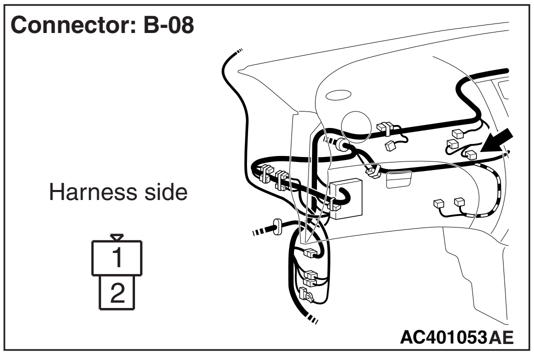


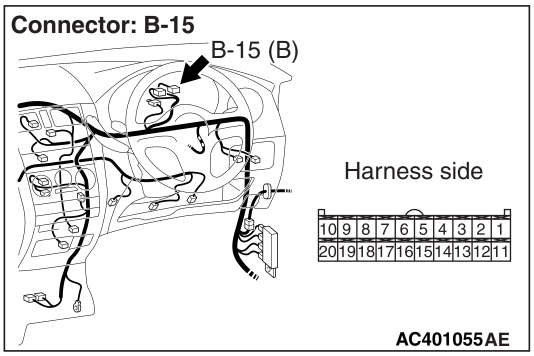
Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the connector.

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Step 3. Check the wiring harness between B-15 combination meter connector (terminals 9 and 15) and B-08 air thermo sensor connector (terminals 1 and 2).





- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the wiring harness.

Step 4. Check the air thermo sensor.
Refer to P.55A-59.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Replace the air thermo sensor.

Step 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code set?
YES : Replace the combination meter (meter and A/C-ECU).
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

Code No. B1082 Automatic/manual types abnormal error

DIAGNOSIS CODE SET CONDITION

This diagnosis code is set when the heater control specification does not meet the combination meter (meter and A/C-ECU) specification.

POSSIBLE CAUSES

- Malfunction of the heater control assembly
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

STEP 1. Replace the heater control

Q: Is the check result normal?
YES : This diagnosis is complete.
NO : Replace the combination meter (meter and A/C-ECU).

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TROUBLE SYMPTOM CHART

M1554005000388

Trouble symptom	Inspection procedure number	Reference page
Communication with the M.U.T.-III is not possible	1	P.55A-10
The air conditioner does not work at all.	2	
Cool air does not come	3	P.55A-11
The blower does not work	4	P.55A-15
The blower air volume cannot be changed	5	P.55A-21
The inside/outside air changeover is impossible	6	P.55A-24
The A/C compressor does not work	7	P.55A-27
The rear window defogger does not work	8	P.55A-32
The A/C indicator flashes	9	P.55A-38
A/C pressure sensor system	10	P.55A-41

SYMPTOM PROCEDURES

Inspection Procedure 1: Communication with the M.U.T.-III is not possible
Inspection Procedure 2: The air conditioner does not work at all.

COMMENTS ON TROUBLE SYMPTOM

If communication with all other systems is not possible, there is a high possibility that there is a malfunction of the diagnosis line. If only the A/C system can not communicate with the M.U.T.-III, the combination meter (meter and A/C-ECU) may be defective.

POSSIBLE CAUSE

Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. Check the communication with combination meter

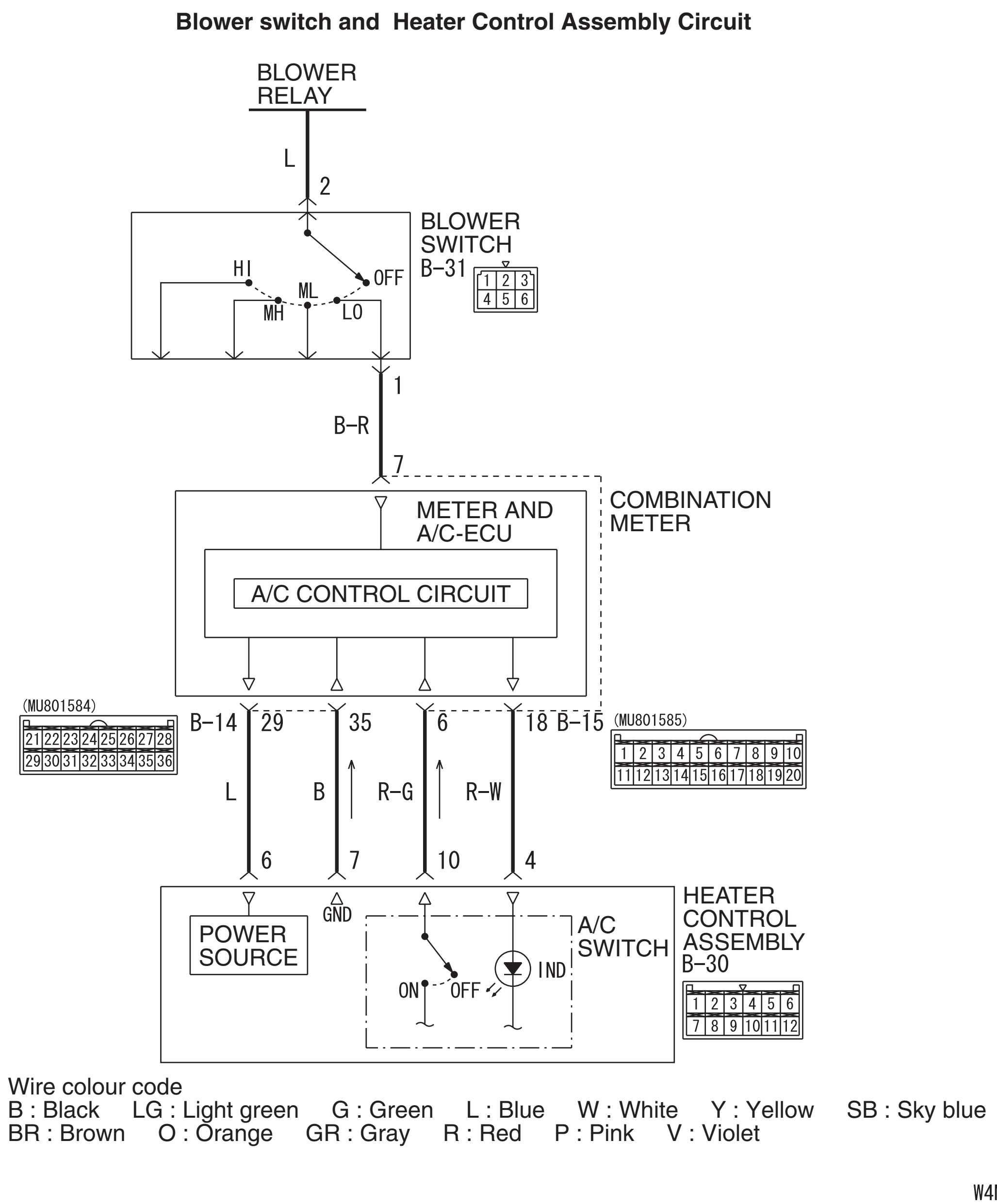
Q: Can the M.U.T.-III communicate with the combination meter?

YES : Inspection Procedure 3: Cool air does not come P.55A-11

NO : Diagnose the combination meter. Refer to P.54A-42.

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Inspection Procedure 3: Cool air does not come



CIRCUIT OPERATION

If the blower air temperature can not be cool when turning A/C switch ON and lowering the preset temperature, inadequate refrigerant quantity, sensors, harness or connectors may be suspected.

POSSIBLE CAUSES

Damaged the wiring harness or connectors

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Troubleshooting P.54D-13.)

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Step 2. M.U.T.-III diagnosis code

Check whether the air conditioner sets a diagnosis code or not.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Refer to diagnosis code chart P.55A-5.

Step 3. M.U.T.-III data list

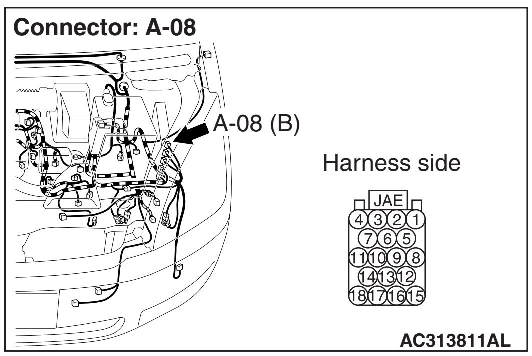
Check that the following service data display contents are normal. (Refer to P.55A-44.)

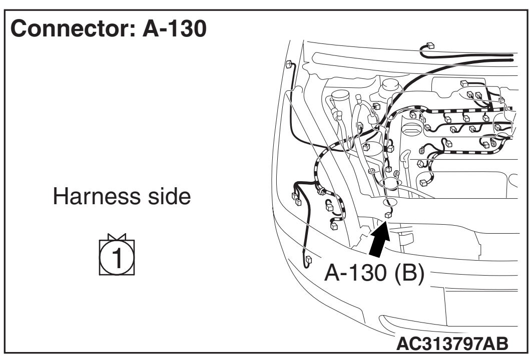
- Item 04: Pressure sensor

Q: Is the check result normal?

YES : Go to Step 4.
NO : Inspection Procedure 10: Refer to A/C pressure sensor system P.55A-41.

Step 4. Connector check: A-130 A/C compressor connector and A-08 engine-CVT-ECU

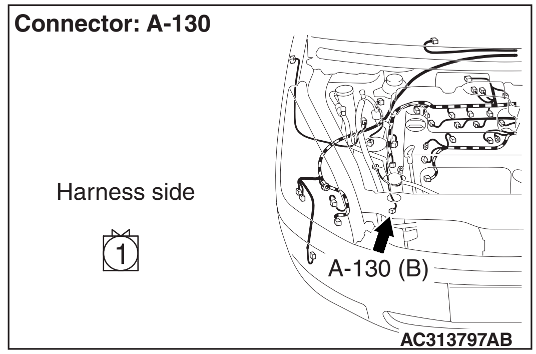




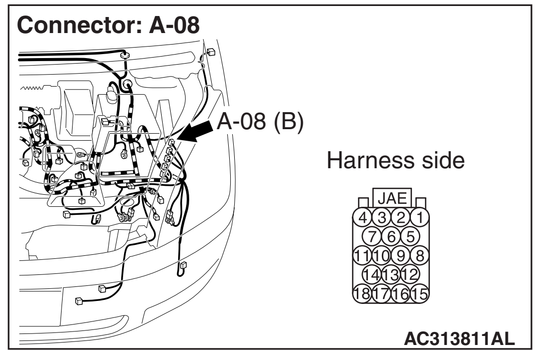
Q: Is the check result normal?

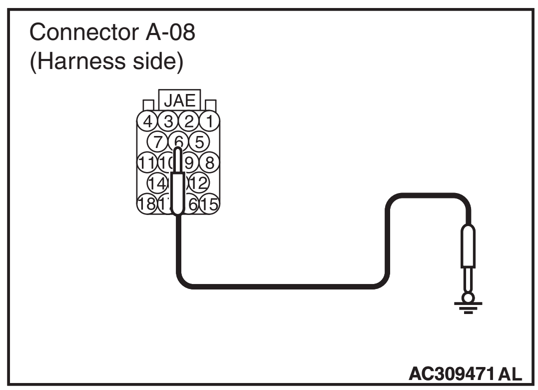
YES : Go to Step 5.
NO : Repair the connector.

Step 5. Voltage measurement at A-130 A/C compressor connector.



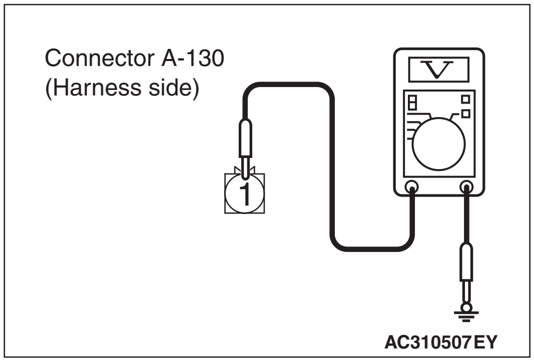
(1) Disconnect the connector, and measure at the wiring harness side.





(2) Disconnect engine-CVT-ECU connector A-08 and earth terminal 6.

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(3) Voltage between terminal 1 and body earth.

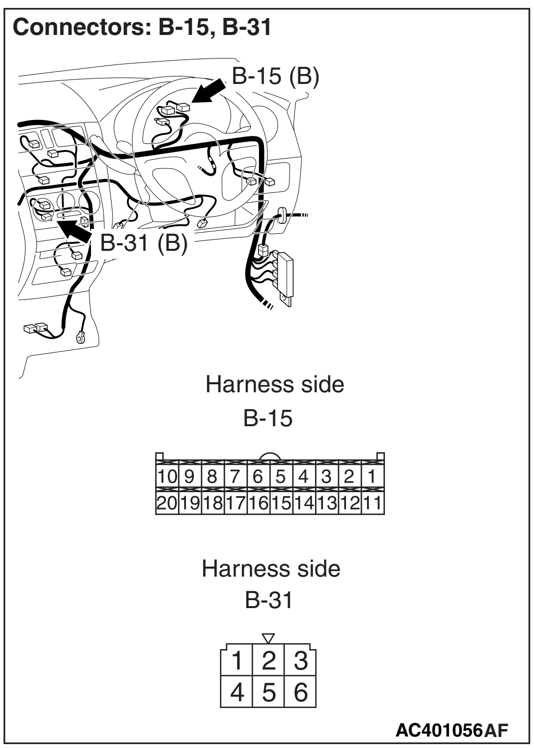
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 6.

NO : Refer to Inspection Procedure 7 " The compressor does not work P.55A-27 ".

Step 6. Connector check: B-31 blower switch connector and B-15 combination meter connector

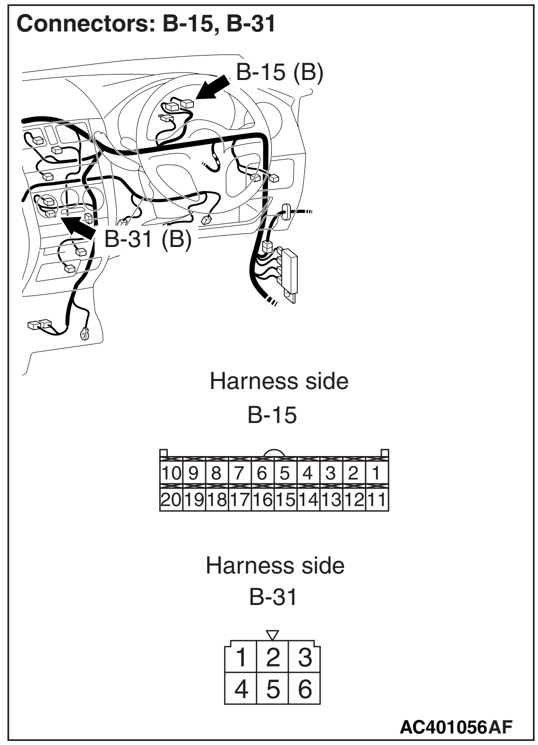


Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector.

Step 7. Check the wiring harness between B-31 blower switch connector terminal No.1 and B-15 combination meter connector terminal No.7.



- Check the blower switch signal line and earth line for open or short circuit.

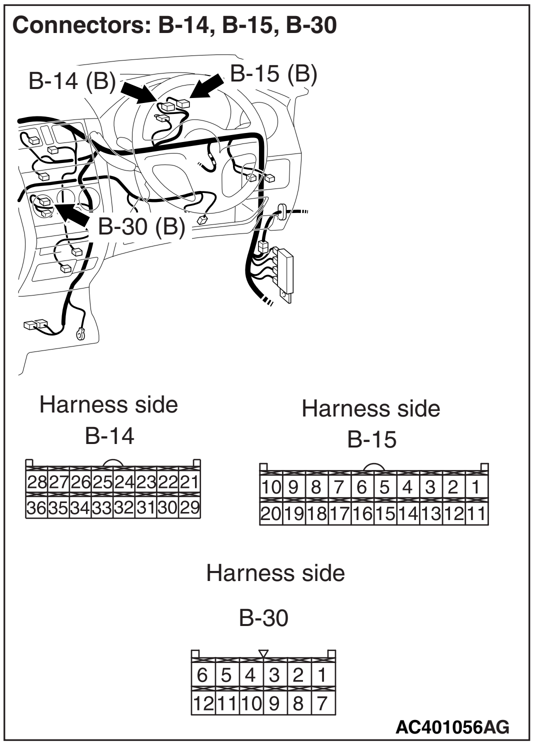
Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the wiring harness.

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Step 8. Connector check: B-30 heater control assembly connector, B-14 and B-15 combination meter connector

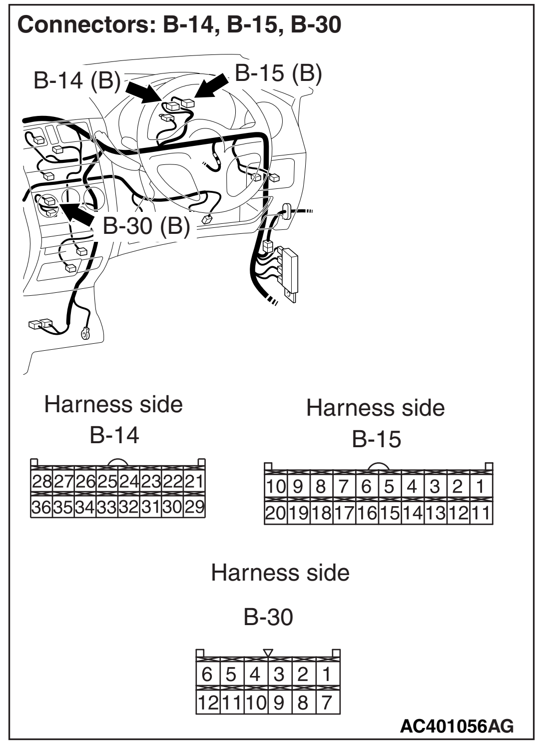


Q: Is the check result normal?

YES : Go to Step 9.

NO : Repair the connector.

Step 9. Check the wiring harness between B-14, B-15 combination meter connector (terminals 29, 35 and 6) and B-30 heater control assembly connector (terminals 6, 7 and 10).



- Check the input line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 10.

NO : Repair the wiring harness.

Step 10. Refrigerant level check

Check that the refrigerant level is adequate. Refer to P.55A-50.

Q: Is the check result normal?

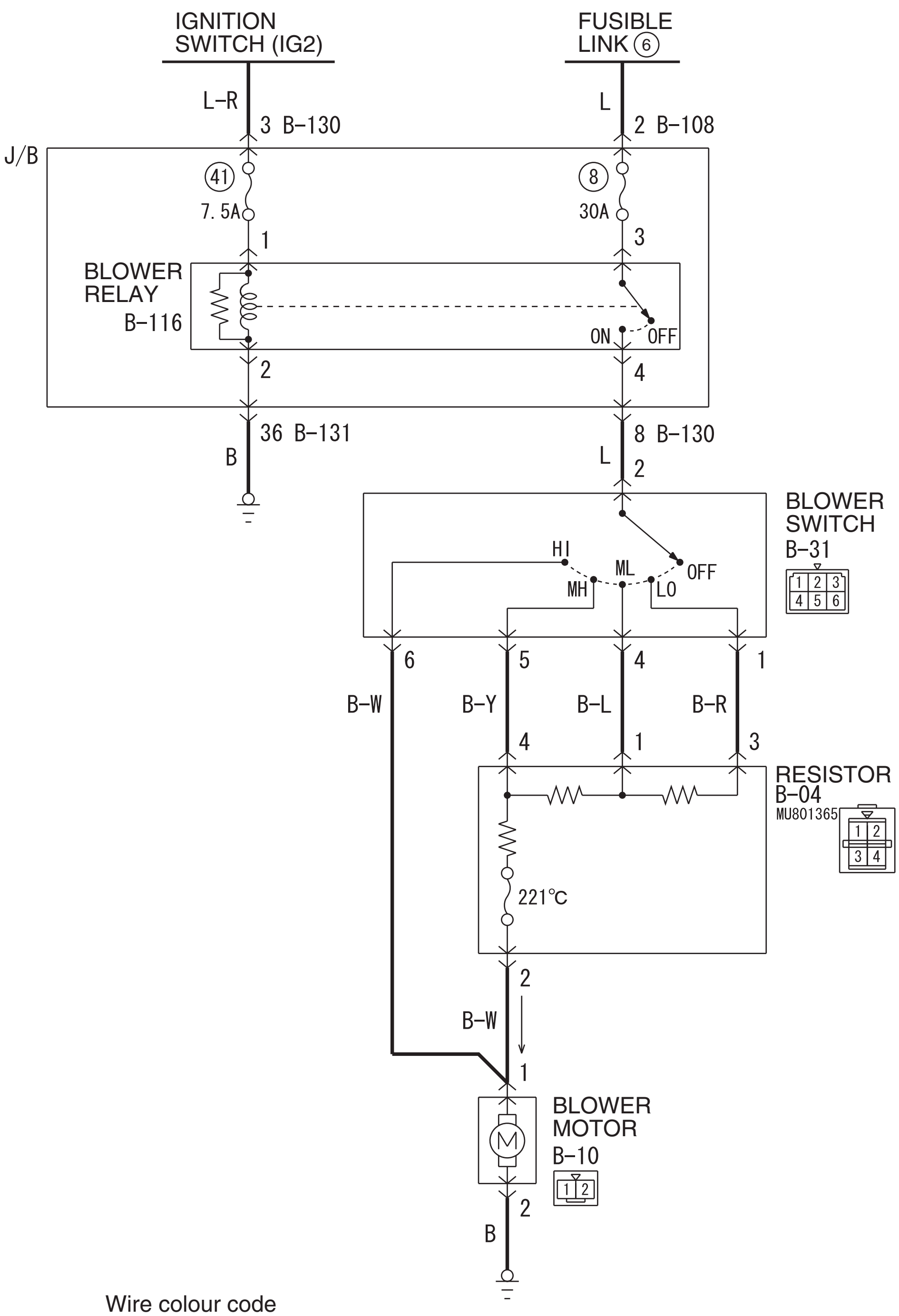
YES : Intermittent malfunction. (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13.)

NO : Charge or remove the refrigerant level. Refer to P.55A-48 or P.55A-48.

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Inspection Procedure 4: The blower does not work

Blower Motor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W4N55L001A

COMMENTS ON TROUBLE SYMPTOM

If the blower motor does not operate, the blower motor circuit system may be defective.

POSSIBLE CAUSES

- Malfunction of the front blower relay
- Malfunction of the blower motor
- Malfunction of the blower switch
- Damaged the wiring harness or connectors

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DIAGNOSIS PROCEDURE

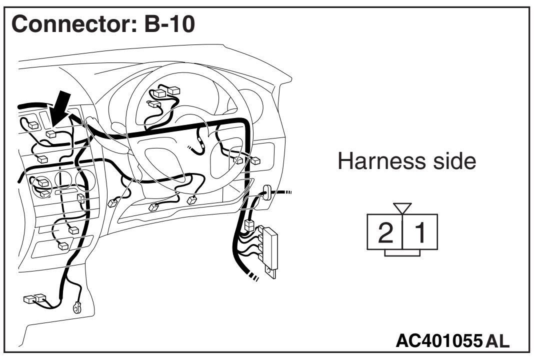
Step 1. Check that the blower motor operates when the blower switch is moved to the "4 (HI) " position.

(1) Turn the ignition switch to the "ON" position.
(2) Turn the blower switch to the "4 (HI) " position.

Q: Does the blower motor operate when the blower switch is moved to the "4 (HI) " position?

YES : Refer to Inspection procedure 5 "The blower air volume cannot be changed P.55A-21."
NO : Go to Step 2.

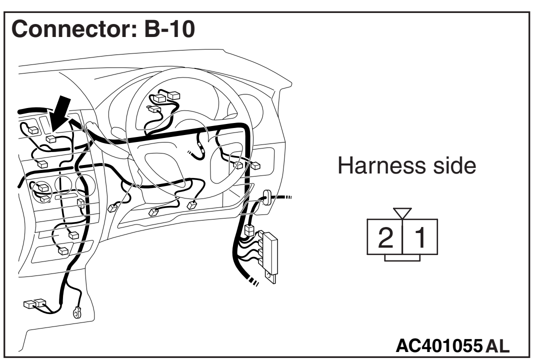
Step 2. Connector check: B-10 blower motor connector



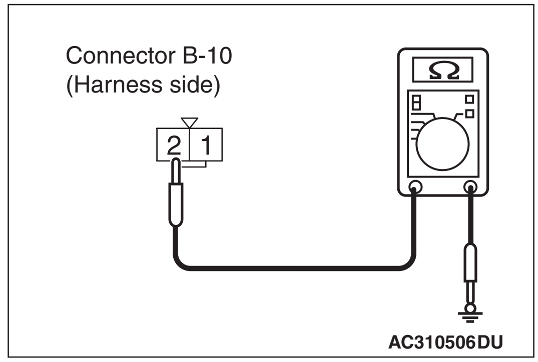
Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the connector.

Step 3. Resistance measurement at the B-10 blower motor connector.



(1) Disconnect the connector, and measure at the wiring harness side.



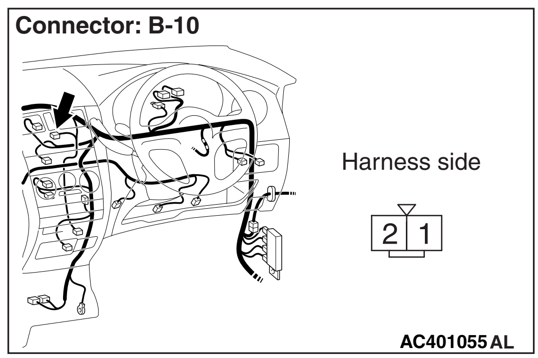
(2) Measure the resistance between terminal 2 and body earth.

OK: 2 ohms or less

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 4.

Step 4. Check the wiring harness between B-10 blower motor connector terminal No.2 and body earth.



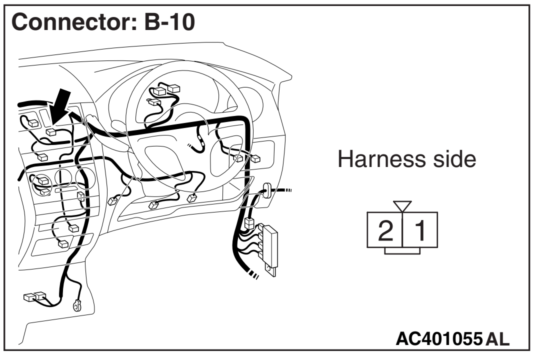
- Check the blower motor earth line for open circuit.

Q: Is the check result normal?

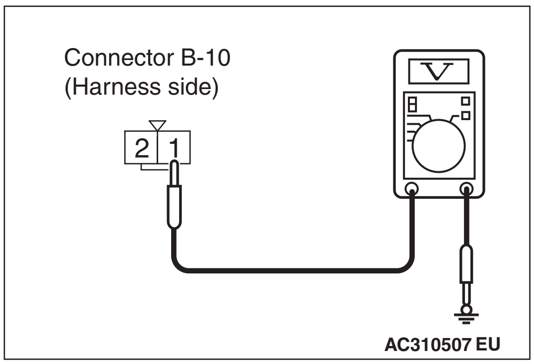
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

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Step 5. Voltage measurement at B-10 blower motor connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Turn the blower switch to the "4 (HI) " position.

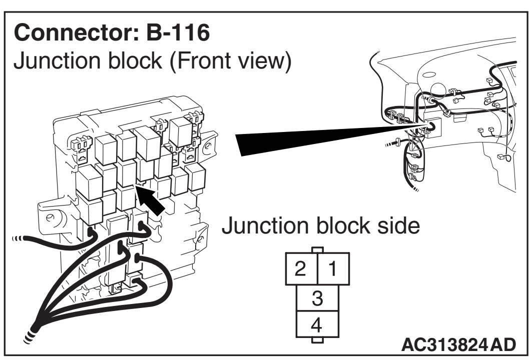


(4) Measure the voltage between terminal 1 and body earth.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 18.
NO : Go to Step 6.

Step 6. Connector check: B-116 blower relay connector

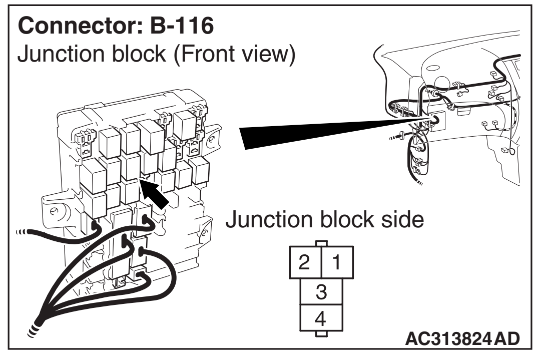


Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the connector.

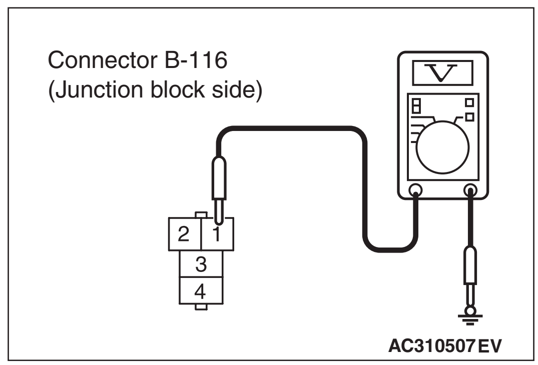
Step 7. Check the blower relay continuity.
Refer to P.55A-52.

Q: Is the blower relay continuity in good condition?
YES : Go to Step 8.
NO : Replace the blower relay.

Step 8. Voltage measurement at B-116 blower relay connector.



(1) Remove the relay, and measure at the junction block side.
(2) Turn the ignition switch to the "ON" position.



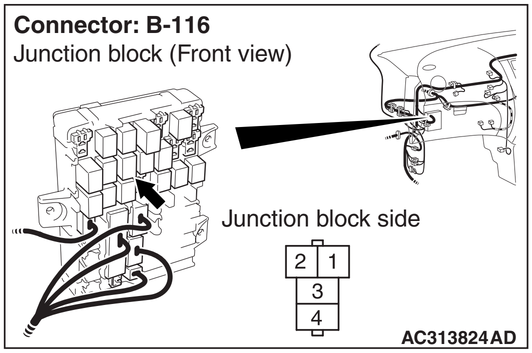
(3) Measure the voltage between terminal 1 and earth.

OK: System voltage

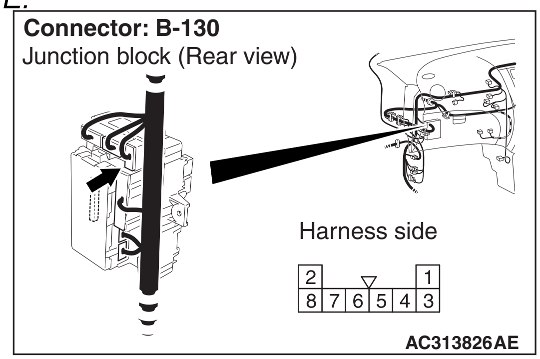
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 9.

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Step 9. Check the wiring harness between B-116 blower relay connector terminal No.1 and the ignition switch (IG2).



NOTE:



Prior to the wiring harness inspection, check junction block connector B-130, and repair if necessary.

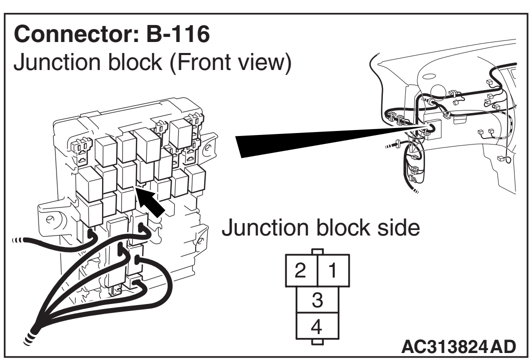
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

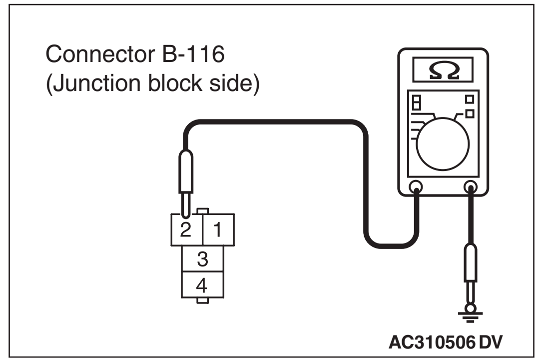
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

Step 10. Resistance measurement at B-116 blower relay connector.



(1) Remove the relay, and measure at the junction block side.



(2) Measure the resistance Continuity between terminal 2 and body earth.

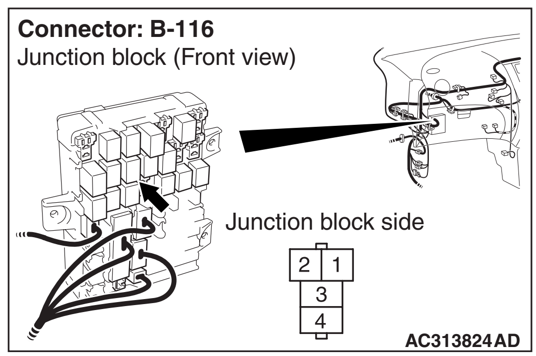
OK: 2 ohms or less

Q: Is the check result normal?

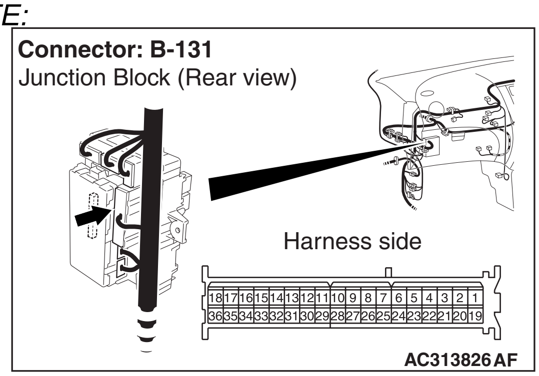
YES : Go to Step 12.

NO : Go to Step 11.

Step 11. Check the wiring harness between B-116 blower relay connector terminal No.2 and earth.



NOTE:



Prior to the wiring harness inspection, check junction block connectors B-131, and repair if necessary.

- Check the blower relay earth wires for open circuit.

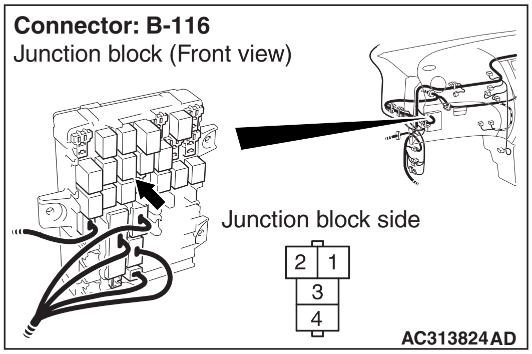
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

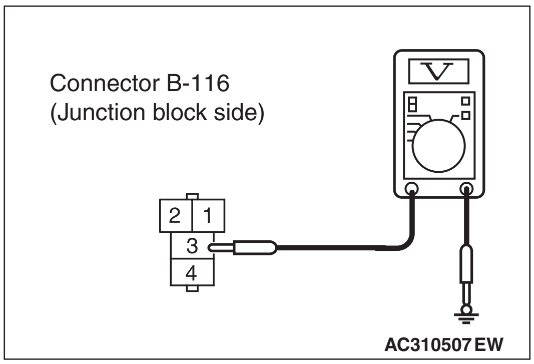
NO : Repair the wiring harness.

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Step 12. Voltage measurement at B-116 blower relay connector.



(1) Remove the relay, and measure at the junction block side.



(2) Measure the voltage between terminal 3 and body earth.

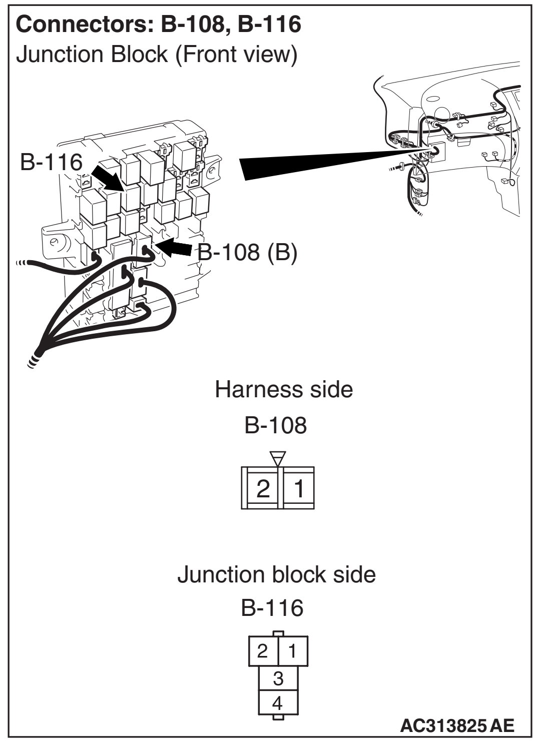
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 14.

NO : Go to Step 13.

Step 13. Check the wiring harness between B-116 blower relay connector terminal No.3 and fusible link (6).



NOTE: Prior to the wiring harness inspection, check junction block connector B-108, and repair if necessary.

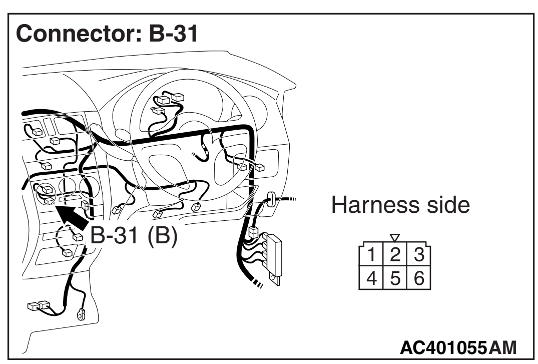
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

Step 14. Connector check: B-31 blower switch connector



Q: Is the check result normal?

YES : Go to Step 15.

NO : Repair the connector.

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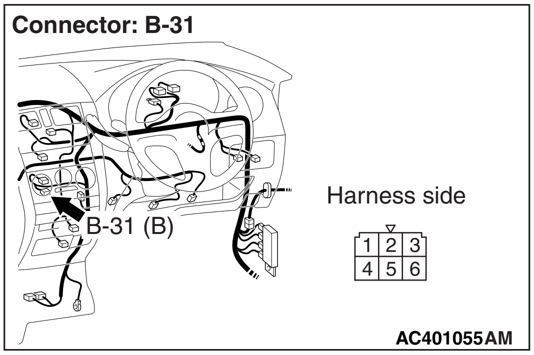
Step 15. Check the blower switch continuity.

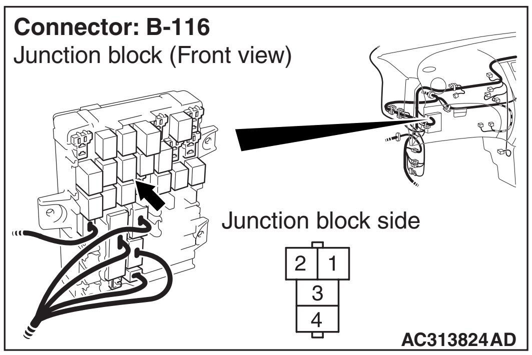
Refer to P.55A-55.

Q: Is the blower switch continuity in good condition?

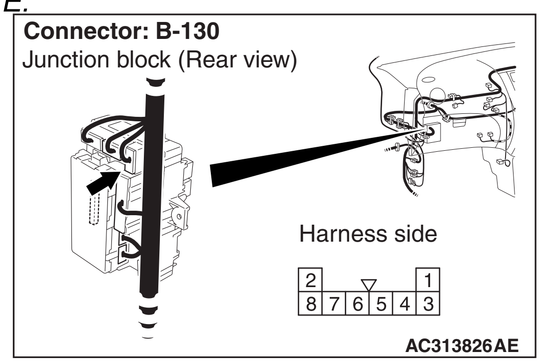
YES : Go to Step 16.
NO : Replace the blower switch.

Step 16. Check the wiring harness between B-31 blower switch connector terminal No.2 and B-116 blower relay connector terminal No.4.





NOTE:



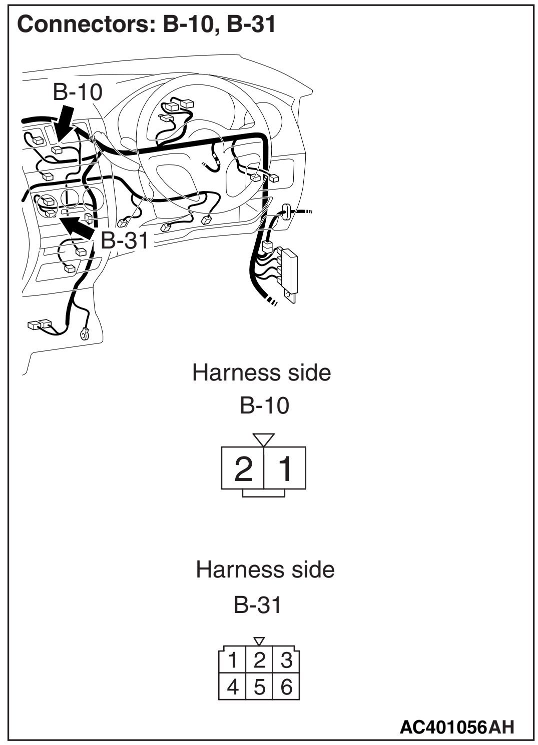
Prior to the wiring harness inspection, check junction block connectors B-130, and repair if necessary.

- Check the blower relay output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 17.
NO : Repair the wiring harness.

Step 17. Check the wiring harness between B-10 blower motor connector terminal No.1 and B-31 blower switch connector terminal No.6.



- Check the blower motor power supply line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

Step 18. Check the blower fan and motor operation.

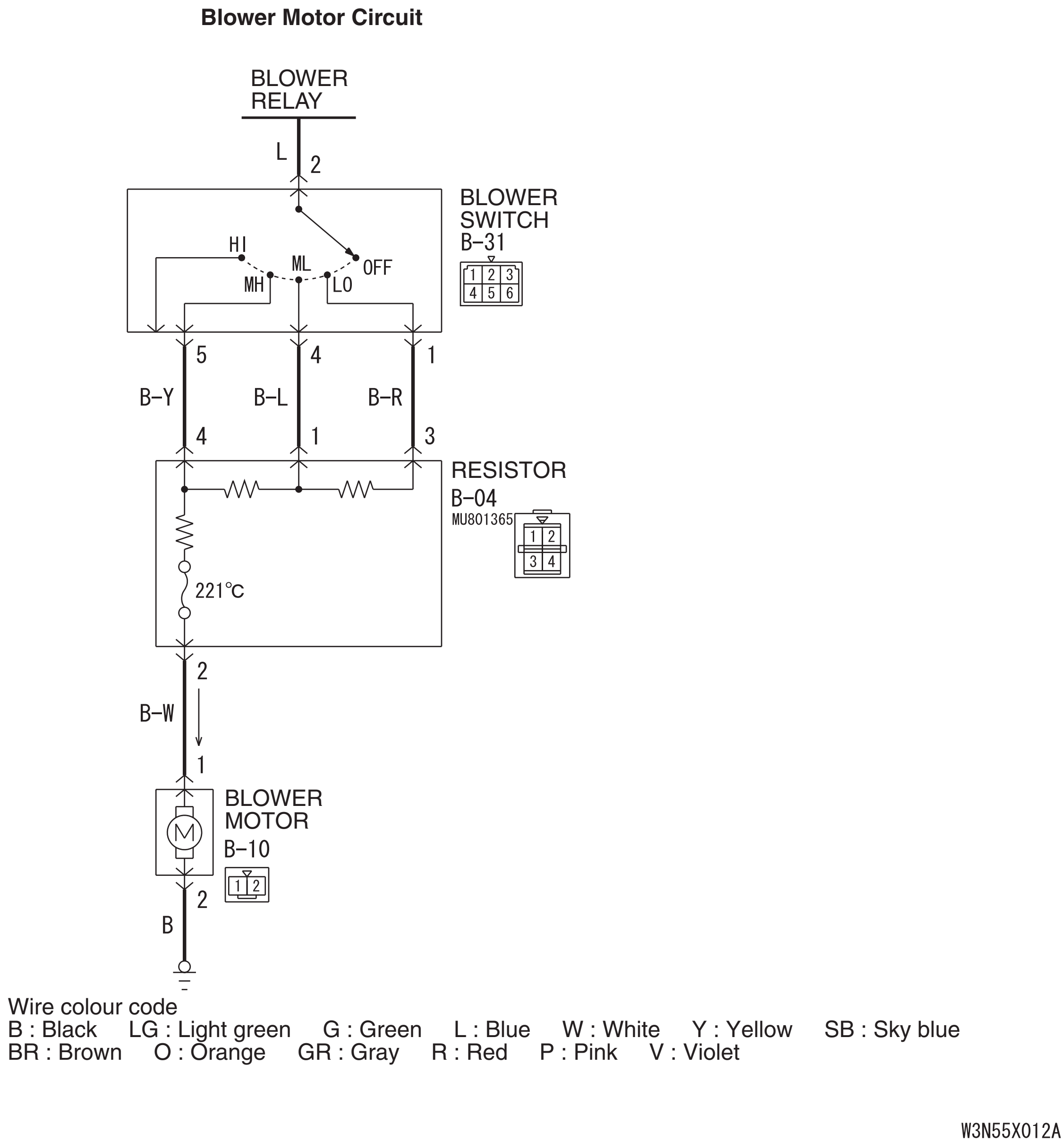
Refer to P.55A-61.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Replace the blower motor.

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Inspection Procedure 5: The blower air volume cannot be changed



COMMENTS ON TROUBLE SYMPTOM

If the blower air amount cannot be changed when the blower switch is operated, the blower switch may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the resistor
- Damaged the wiring harness or connectors
- Malfunction of the blower switch

DIAGNOSIS PROCEDURE

Step 1. Check that the blower motor operates when the blower switch is moved to the "4 (HI)" position.

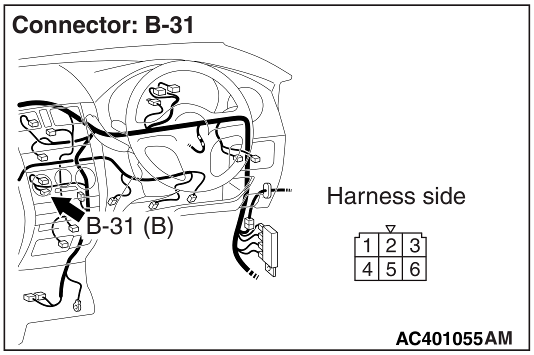
(1) Turn the ignition switch to the "ON" position.
(2) Turn the blower switch to the "4 (HI) " position.

Q: Does the blower motor operate when the blower switch is moved to the "4 (HI)" position?

YES : Go to Step 2.
NO : Refer to Inspection procedure 4 "The blower does not work P.55A-15."

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Step 2. Connector check: B-31 blower switch connector



Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the connector.

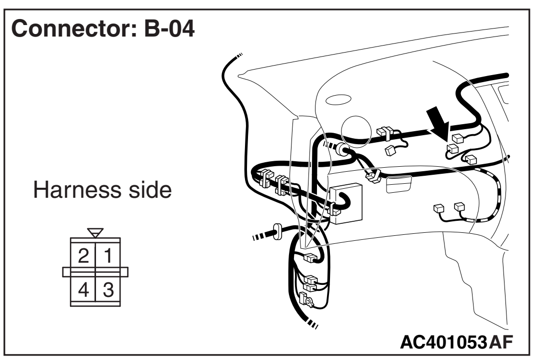
Step 3. Check the blower switch continuity.

Refer to P.55A-55.

Q: Is the blower switch continuity in good condition?

YES : Go to Step 4.
NO : Replace the blower switch.

Step 4. Connector check: B-04 resistor connector



Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the connector.

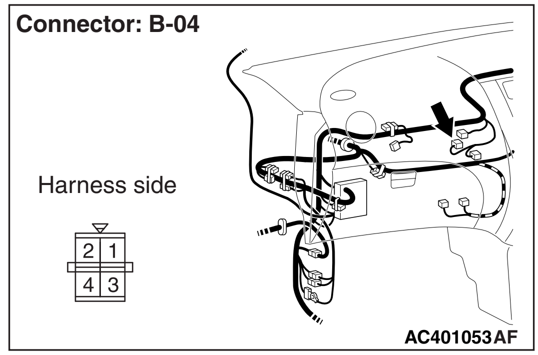
Step 5. Check the resistor resistance value.

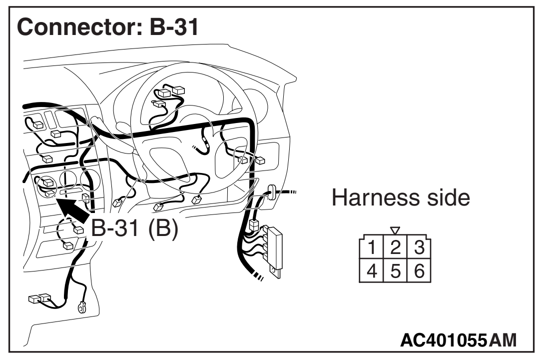
Refer to P.55A-61.

Q: Is the measured value at the standard value?

YES : Go to Step 6.
NO : Replace the blower resistor.

Step 6. Check the wiring harness between B-31 blower switch connector (terminals 1, 4 and 5) and B-04 resistor connector (terminals 3, 1 and 4).



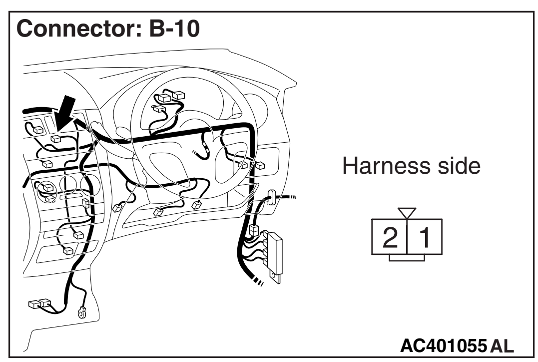


- Check the blower switch output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the wiring harness.

Step 7. Connector check: B-10 blower motor connector

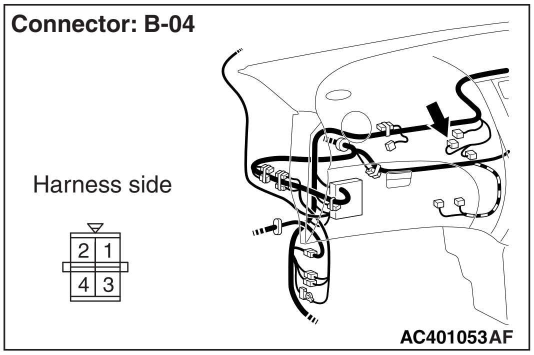


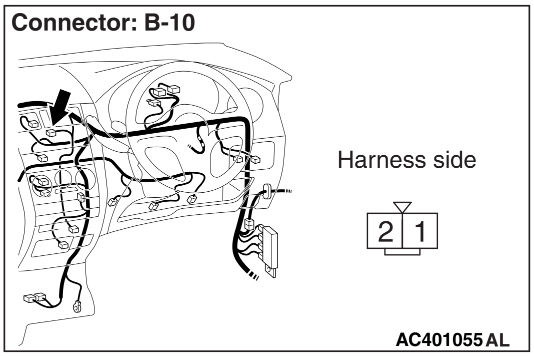
Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the connector.

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Step 8. Check the wiring harness between B-10 blower motor connector terminal No.1 and B-04 resistor connector terminal No.2.





- Check the blower motor power supply line for open circuit.

Q: Is the check result normal?

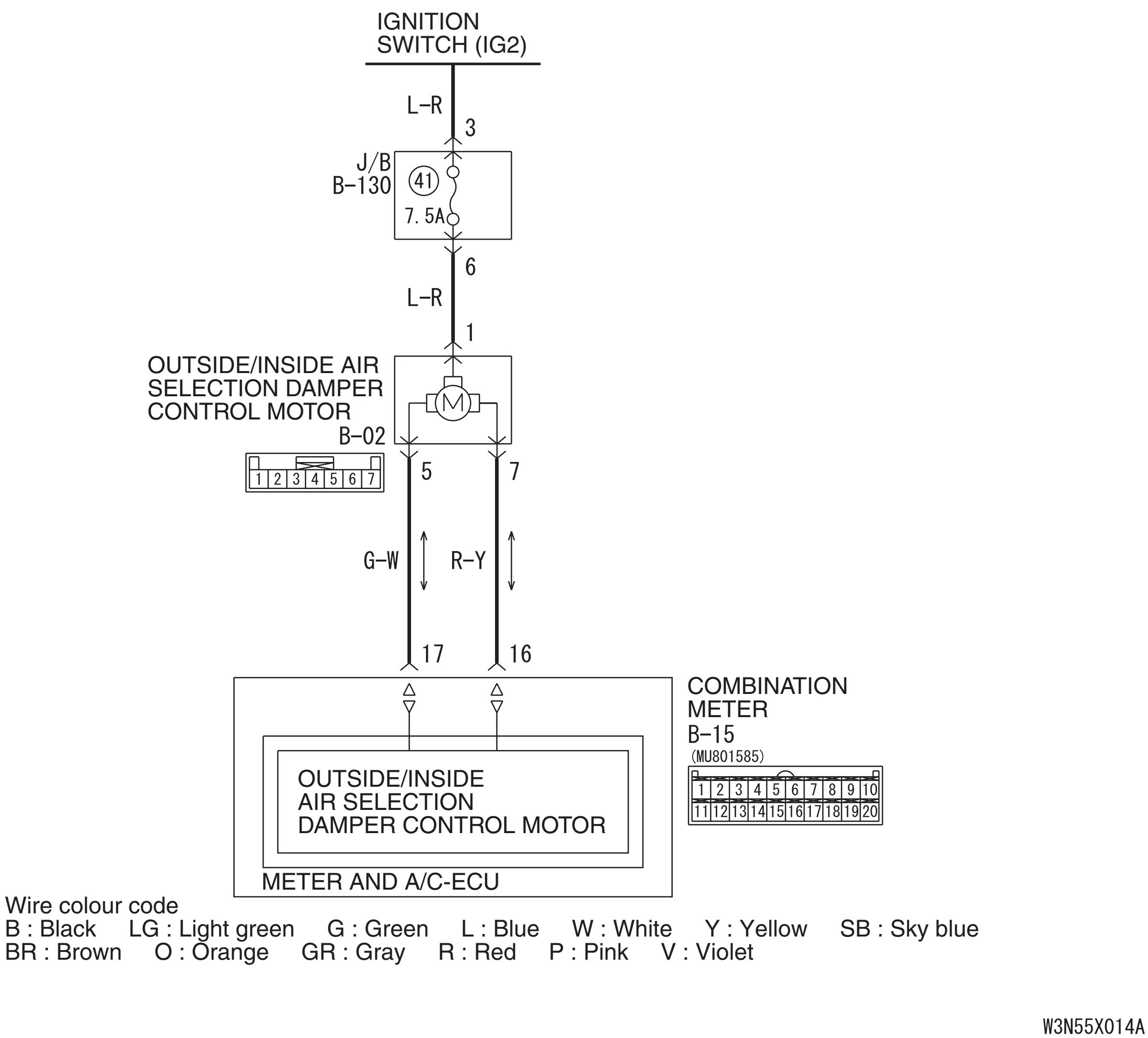
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

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Inspection Procedure 6: The inside/outside air changeover is impossible

Outside/Inside Air Selection Damper Control Motor Circuit



COMMENTS ON TROUBLE SYMPTOM

When inside air cannot be changed to outside air vice versa even if its changeover switch is on, the outside/inside air selection damper control motor system may be defective.

POSSIBLE CAUSES

- Malfunction of the outside/inside air selection damper control motor
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III diagnosis code

Check whether the air conditioner sets a diagnosis code or not.

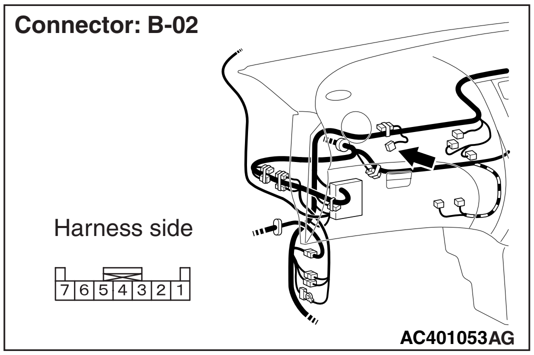
Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to diagnosis code chart P.55A-5.

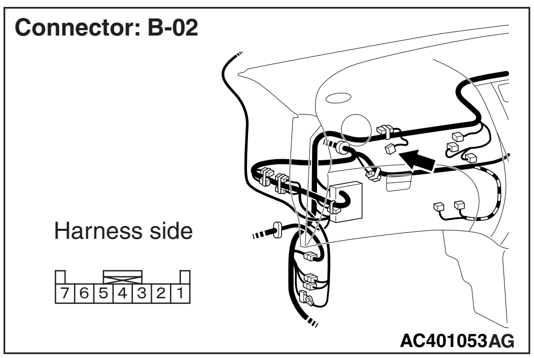
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Step 2. Connector check: B-02 outside/inside air selection damper control motor connector

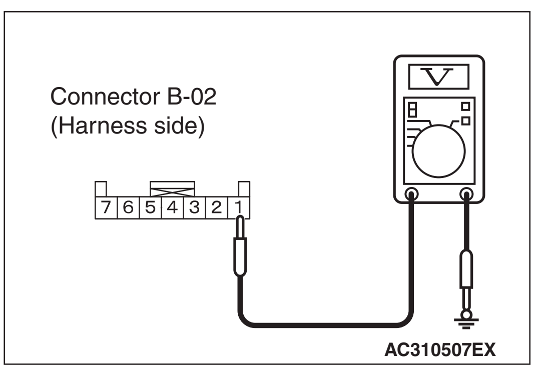


Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

Step 3. Voltage measurement at B-02 outside/inside air selection damper control motor connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the ON position.

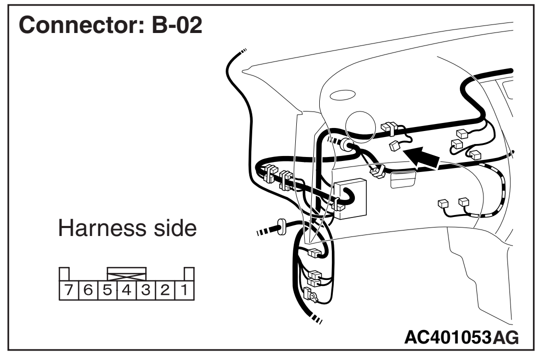


(3) Measure the voltage between terminal 1 and body earth.

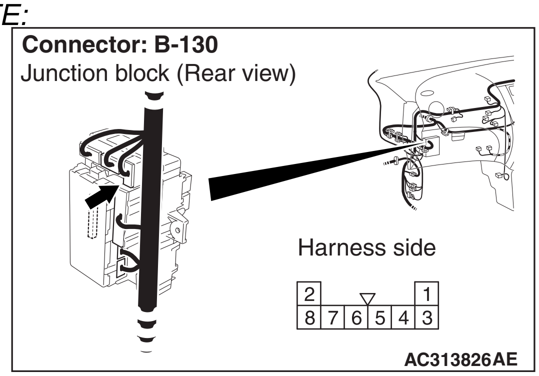
OK: System voltage

Q: Is the check result normal?
YES : . Go to Step 5.
NO : . Go to Step 4.

Step 4. Check the wiring harness between B-02 outside/inside air selection damper control motor connector terminal No.1 and the ignition switch (IG2).



NOTE:



Prior to the wiring harness inspection, check junction block connectors B-130, and repair if necessary.

- Check the motor power supply line for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

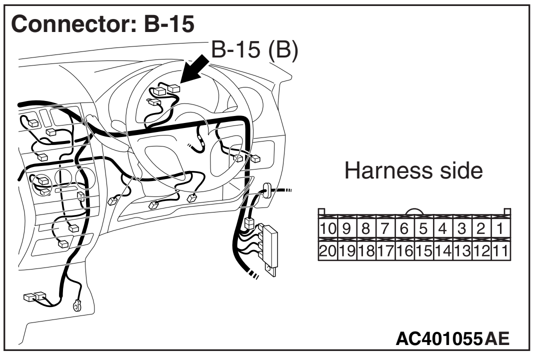
Step 5. Check the outside/inside air selection damper control motor

Refer to P.55A-61.

Q: Is the check result normal?
YES : Go to Step 6.
NO : Replace the outside/inside air selection damper control motor.

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Step 6. Connector check: B-15 combination meter connector

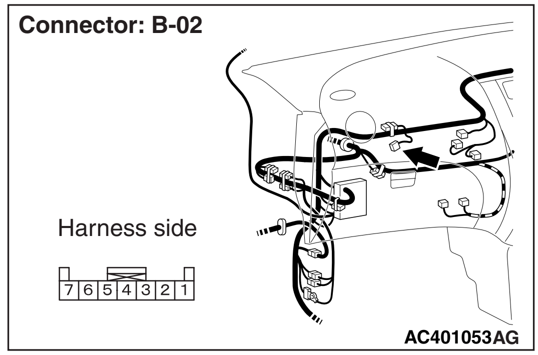


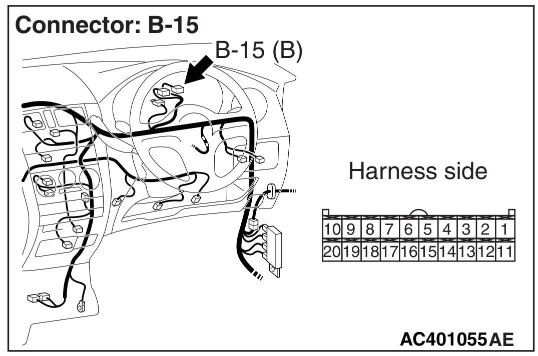
Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the connector.

Step 7. Check the wiring harness between B-15 combination meter connector (terminals 17 and 16) and B-02 outside/inside air selection damper control motor connector (terminals 5 and 7).





- Check the motor activating lines for open or short circuit.

Q: Is the check result normal?

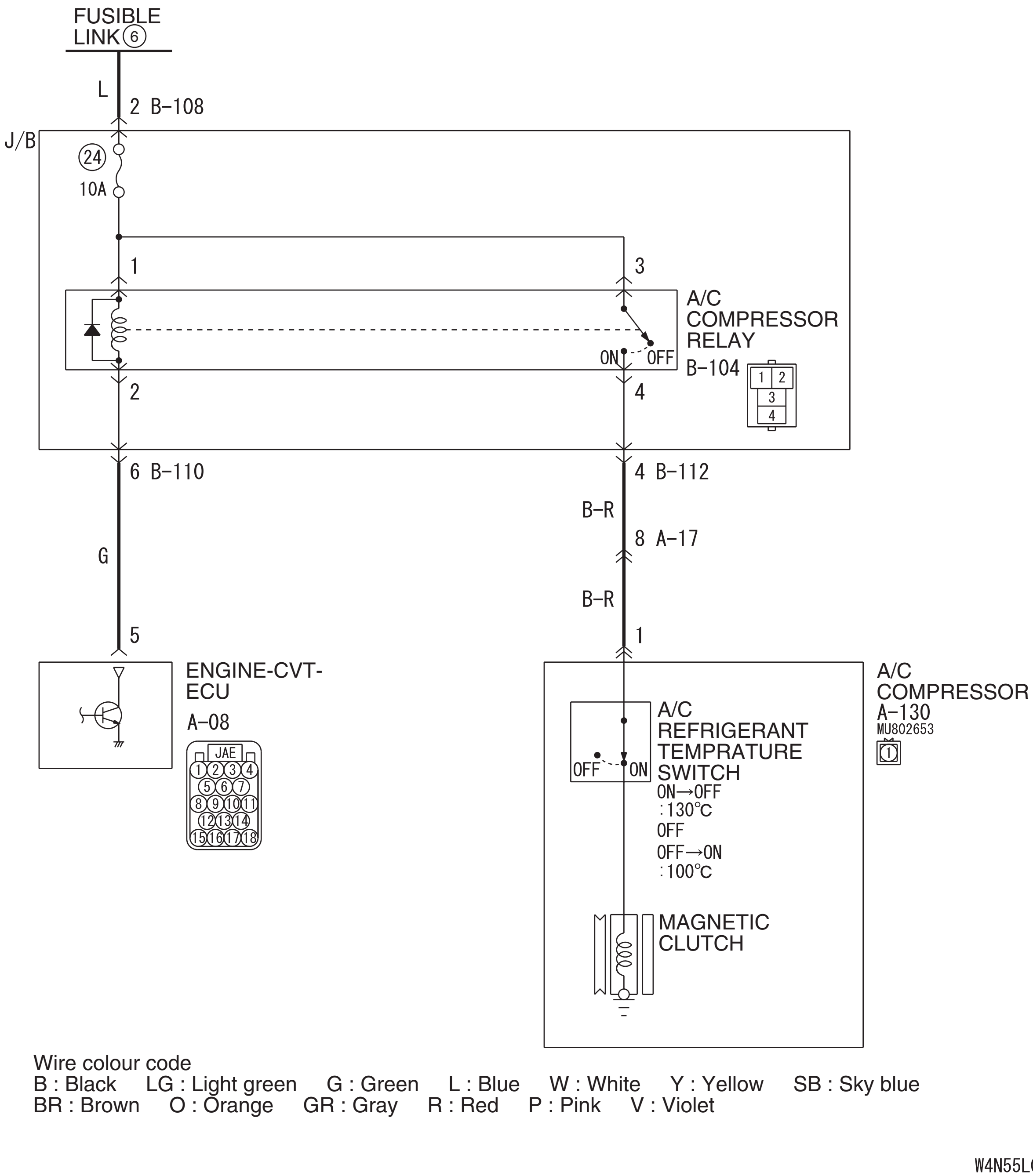
YES : Replace the combination meter (meter and A/C-ECU).

NO : Repair the wiring harness.

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Inspection Procedure 7: The A/C compressor does not work

A/C Compressor Circuit



COMMENTS ON TROUBLE SYMPTOM

When the A/C compressor does not work, the A/C compressor circuit system or the CAN bus line may be defective.

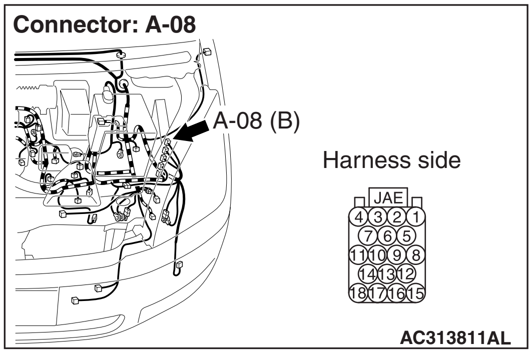
POSSIBLE CAUSES

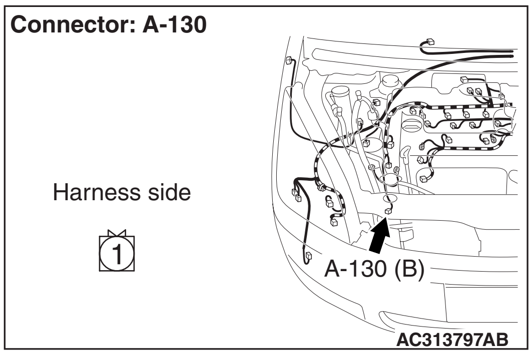
- Malfunction of A/C compressor
- Malfunction of A/C compressor relay
- Malfunction of A/C pressure sensor
- Damaged harness wires and connectors
- Malfunction of engine-CVT-ECU
- Malfunction of the combination meter (meter and A/C-ECU)

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DIAGNOSIS PROCEDURE

Step 1. Connector check: A-130 A/C compressor connector and A-08 engine-CVT-ECU



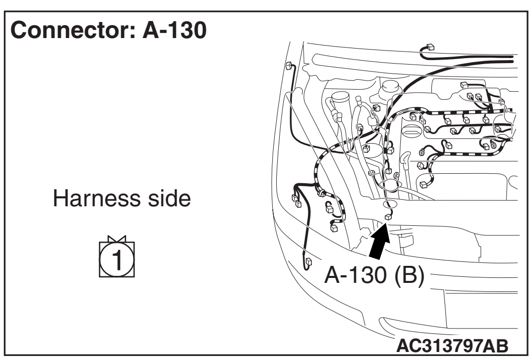


Q: Is the check result normal?

YES : Go to Step 2.

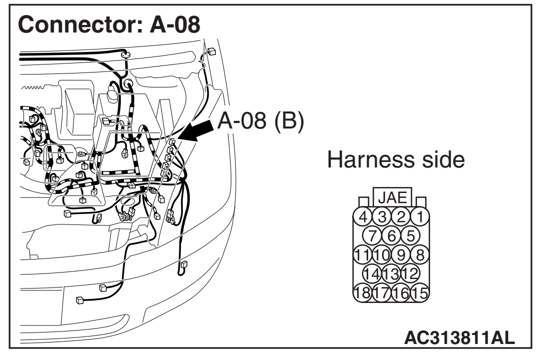
NO : Repair the connector.

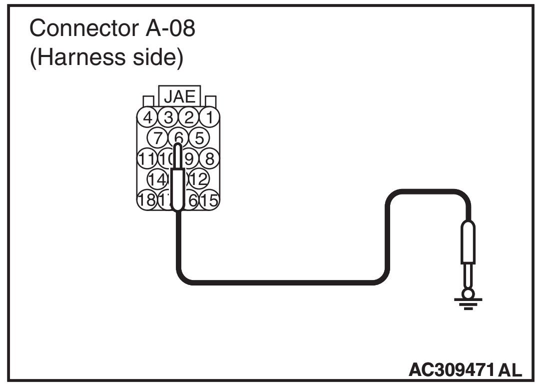
Step 2. Voltage measurement at A-130 A/C compressor connector.



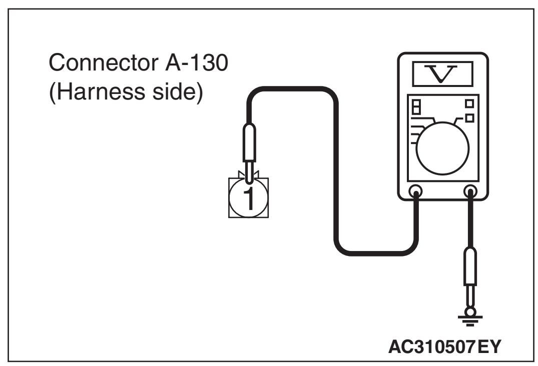
(1) Disconnect the connector, and measure at the wiring harness side.

(2) Turn the ignition switch to the "ON" position.





(3) Disconnect engine-CVT-ECU connector A-08 and earth terminal 6.



(4) Voltage between terminal 1 and body earth.

OK: System voltage

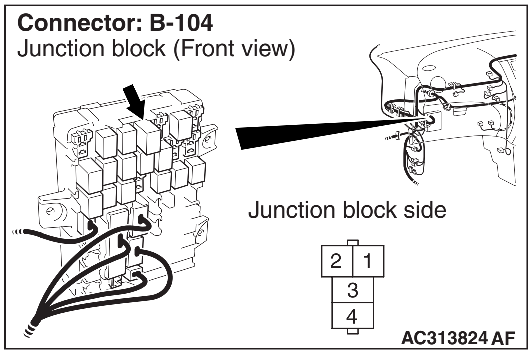
Q: Is the check result normal?

YES : Go to Step 9.

NO : Go to Step 3.

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Step 3. Connector check: B-104 A/C compressor relay connector



Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the connector.

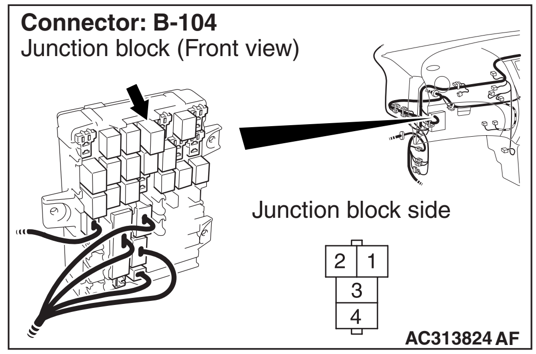
Step 4. Check the A/C compressor relay continuity.

Refer to P.55A-52.

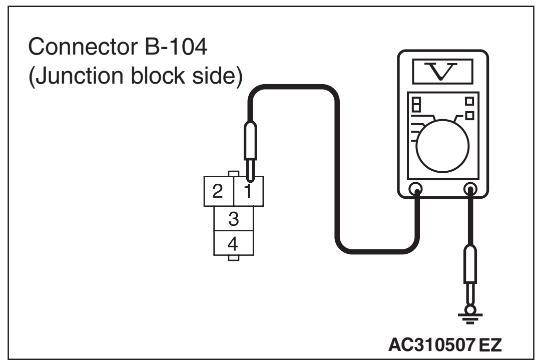
Q: Is the A/C compressor relay in good condition?

YES : Go to Step 5.
NO : Replace the A/C compressor relay.

Step 5. Voltage measurement at B-104 A/C compressor relay connector.

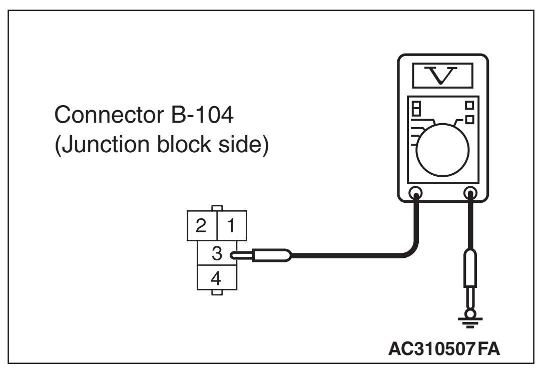


(1) Remove the relay, and measure at the junction block side.
(2) Turn the ignition switch to the "ON" position.



(3) Voltage between terminal 1 and body earth.

OK: System voltage



(4) Voltage between terminal 3 and body earth.

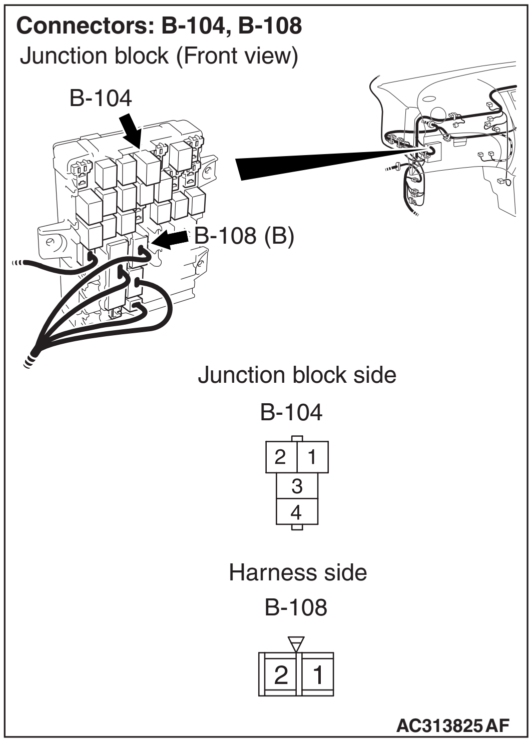
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 7.
NO : Go to Step 6.

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Step 6. Check the wiring harness between B-104 A/C compressor relay connector terminal No.1, 3 and the fusible link (6).



NOTE: Prior to the wiring harness inspection, check junction block connectors C-108, and repair if necessary.

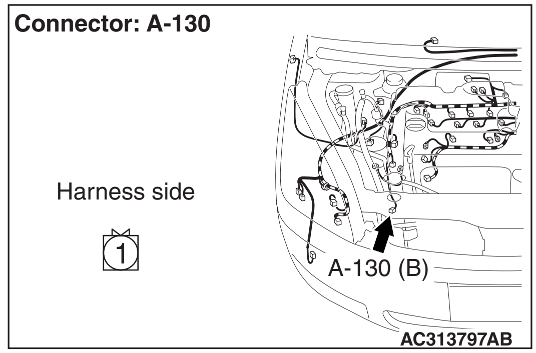
- Check the A/C compressor relay power supply line for open circuit.

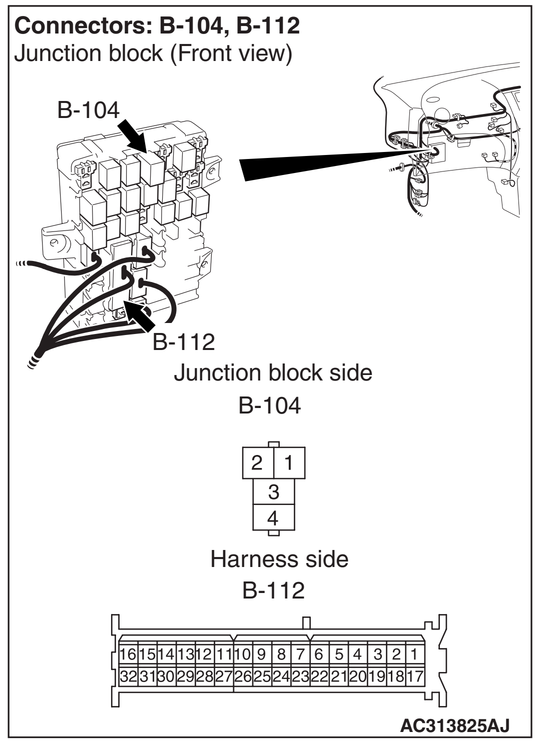
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

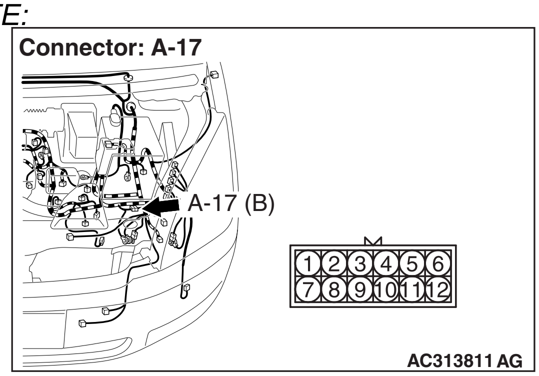
NO : Repair the wiring harness.

Step 7. Check the wiring harness between B-104 A/C compressor relay connector terminal No.4 and A-130 A/C compressor connector terminal No.1.





NOTE:

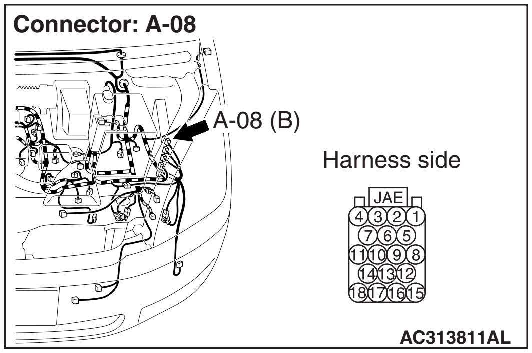


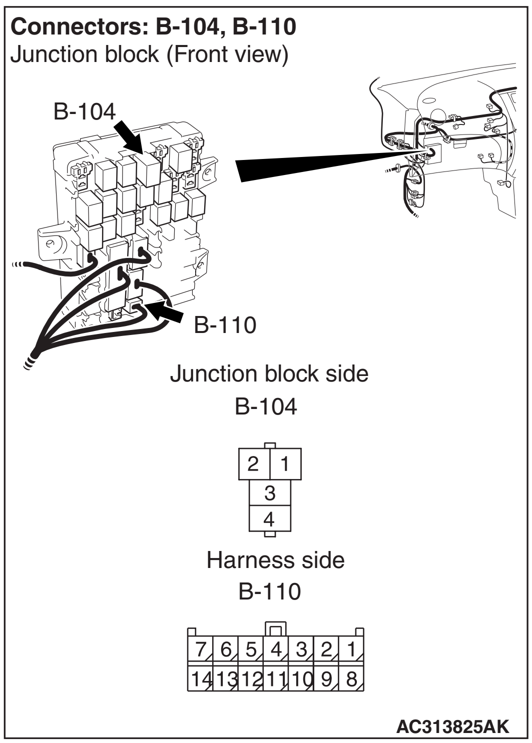
Prior to the wiring harness inspection, check intermediate connector A-17 and junction block connector B-112, and repair if necessary.

- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the wiring harness.

Step 8. Check the wiring harness between B-104 A/C compressor relay connector terminal No.2 and A-08 A/C compressor assembly connector terminal No.6.





NOTE: Prior to the wiring harness inspection, check junction block connector B-110, and repair if necessary.

- Check the A/C compressor power supply line for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

Step 9. Check the magnetic clutch operation.
Refer to P.55A-64.

Q: Can the sound of the magnetic clutch (click) be heard?
YES : Go to Step 10.
NO : Replace the compressor magnet clutch.

Step 10. Check the refrigerant level.
Refer to P.55A-50.

Q: Is the refrigerant level correct?
YES : Go to Step 11.
NO : Correct the refrigerant level (Refer to P.55A-48 or P.55A-48).

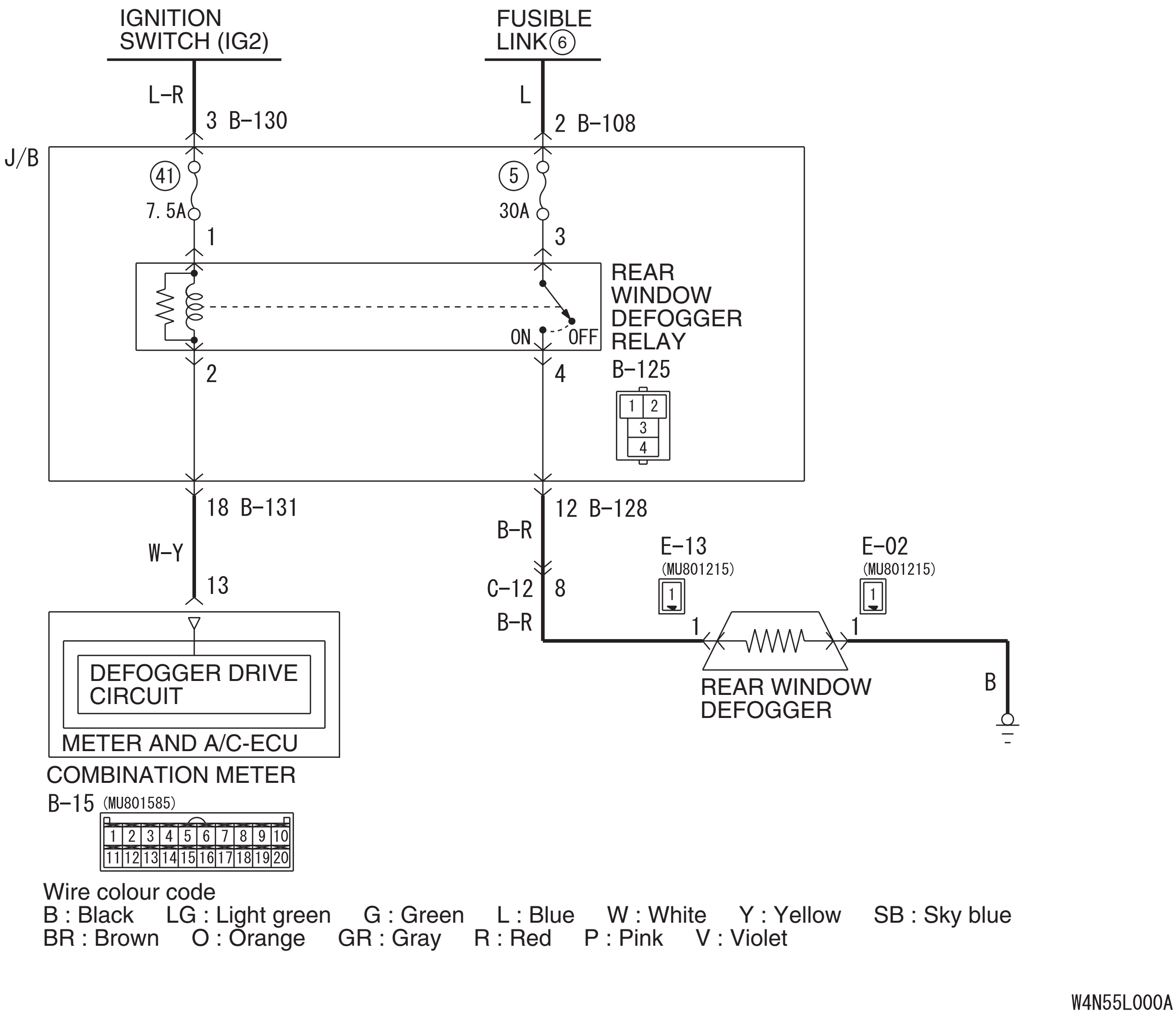
Step 11. Replace the combination meter (meter and A/C-ECU), and then recheck the trouble symptom
Check that the compressor works normally.

Q: Is the check result normal?
YES : This diagnosis is complete.
NO : Replace the engine-CVT-ECU.

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Inspection Procedure 8: The rear window defogger does not work

Defogger Circuit



CIRCUIT OPERATION

If the rear window defogger does not operate when the rear window defogger switch is turned on, the rear window defogger relay system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the combination meter (meter and A/C-ECU)
- Malfunction of the rear window defogger relay
- Damaged the wiring harness or connectors
- Malfunction of the rear window defogger

DIAGNOSIS PROCEDURE

Step 1. Check the A/C operation.

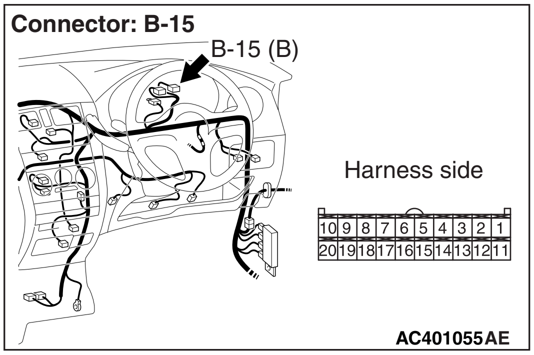
Q: Do the A/C work normally?

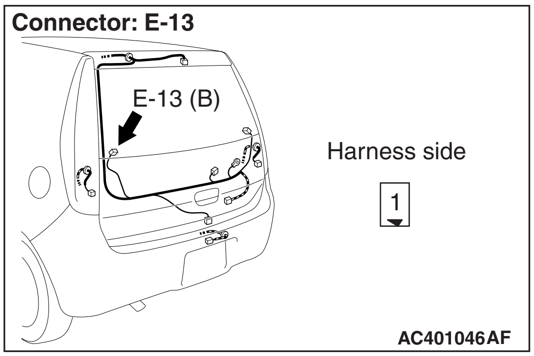
YES : Go to Step 2.

NO : Refer to Inspection procedure 3 "Cool air does not come P.55A-11."

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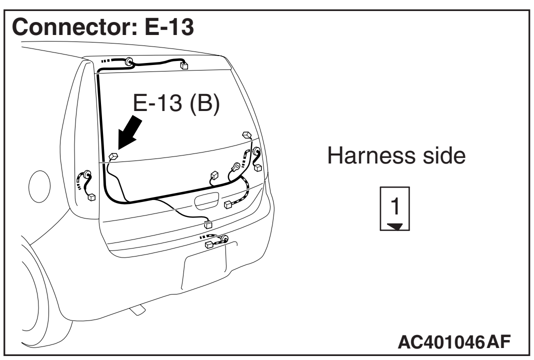
Step 2. Connector check: B-15 combination meter connector and E-13 rear window defogger connector





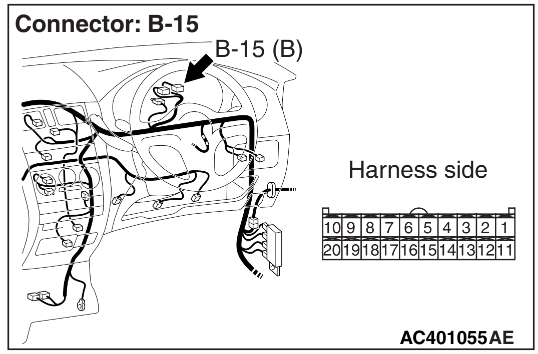
Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

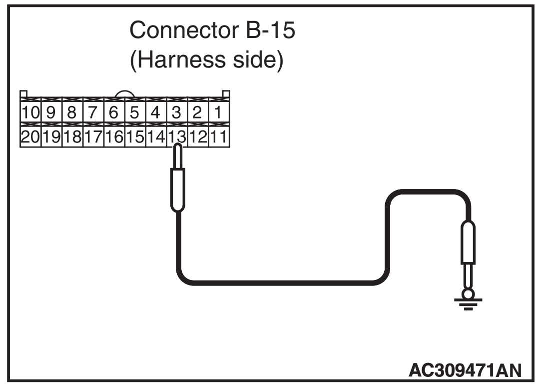
Step 3. Voltage measurement at E-13 rear window defogger connector.



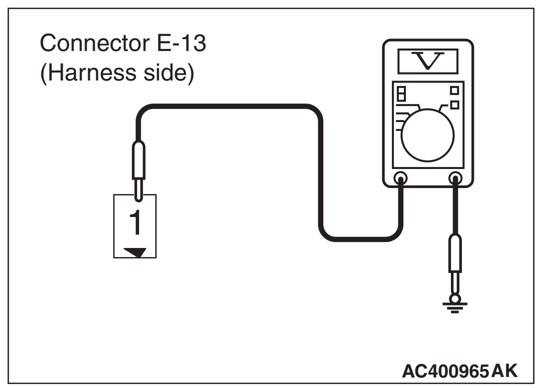
(1) Disconnect the connector, and measure at the wiring harness side.

(2) Turn the ignition switch to the "ON" position.





(3) Disconnect combination meter connector B-15 and earth terminal 13.



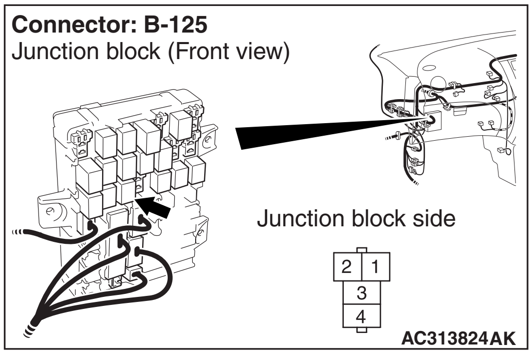
(4) Measure the voltage between terminal 1 and body earth.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 12.
NO : Go to Step 4.

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Step 4. Connector check: B-125 rear window defogger relay connector



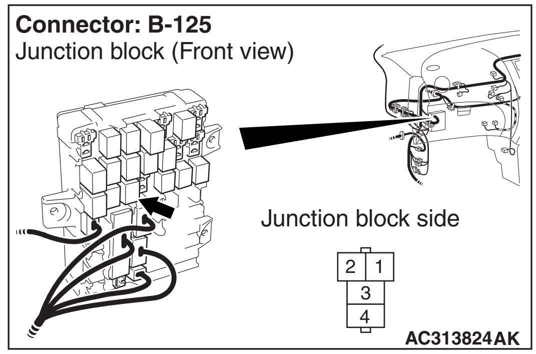
Q: Is the check result normal?
- **YES :** Go to Step 5.
- **NO :** Repair the connector.

Step 5. Check the rear window defogger relay continuity.

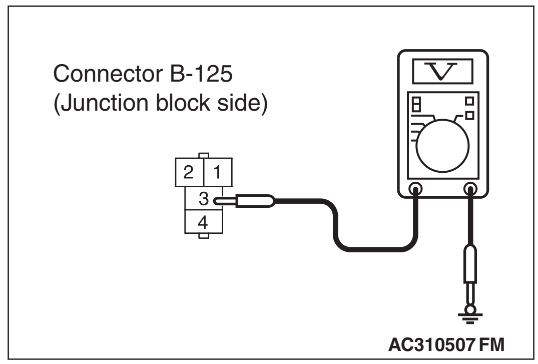
Refer to P.54A-122.

Q: Is the rear window defogger relay in good condition?
- **YES :** Go to Step 6.
- **NO :** Replace the rear window defogger relay.

Step 6. Voltage measurement at B-125 rear window defogger relay connector.



(1) Remove the relay, and measure at the junction block side.



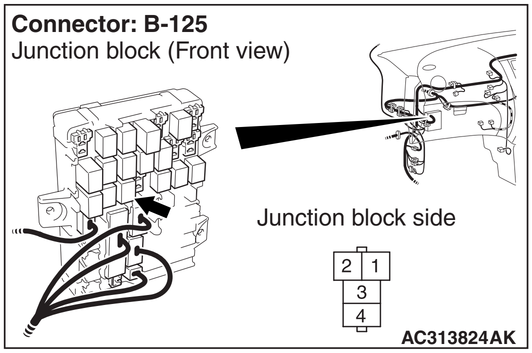
(2) Measure the voltage between terminal 3 and body earth.

OK: System voltage

Q: Is the check result normal?
- **YES :** Go to Step 8.
- **NO :** Go to Step 7.

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Step 7. Check the wiring harness between B-125 rear window defogger relay connector terminal No.3 and the fusible link (6).



NOTE: Prior to the wiring harness inspection, check junction block connector B-108, and repair if necessary.

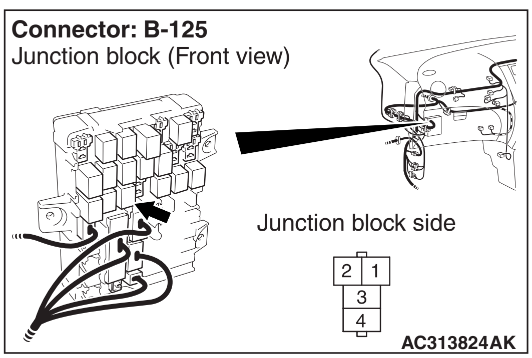
- Check the rear window defogger relay power supply line for open or short circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

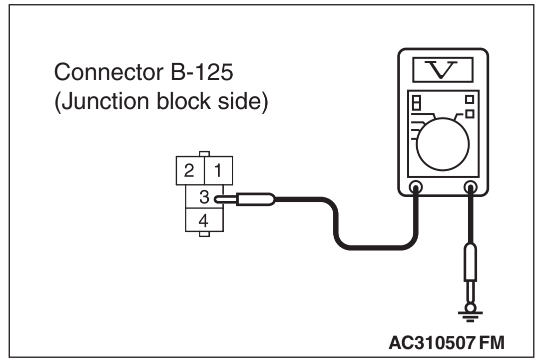
NO : Repair the wiring harness.

Step 8. Voltage measurement at B-125 rear window defogger relay connector.



(1) Remove the relay, and measure at the junction block side.

(2) Turn the ignition switch to the "ON" earth position.



(3) Voltage between terminal 1 and body earth.

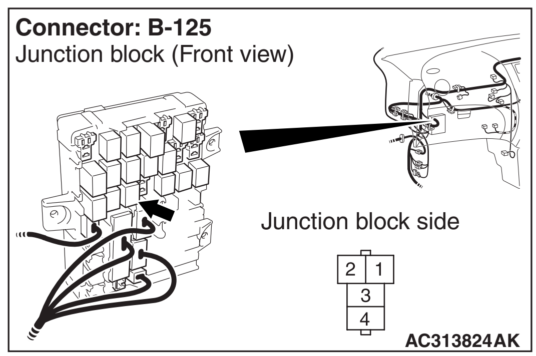
OK: System voltage

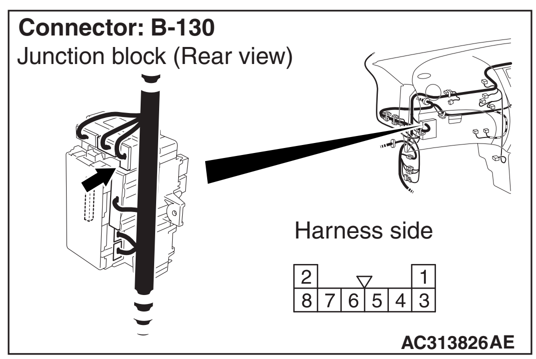
Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

Step 9. Check the wiring harness between B-125 rear window defogger relay connector No.1 and ignition switch (IG2).





NOTE: Prior to the wiring harness inspection, check junction block connector B-130, and repair if necessary.

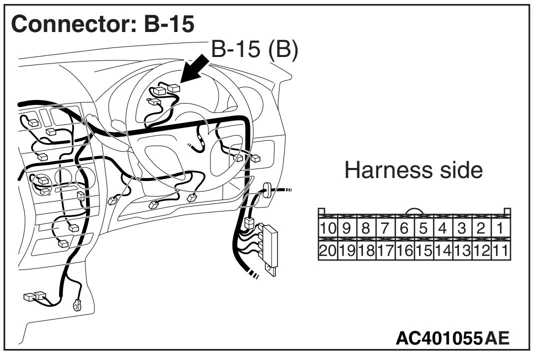
- Check the rear window defogger power supply line for open circuit.

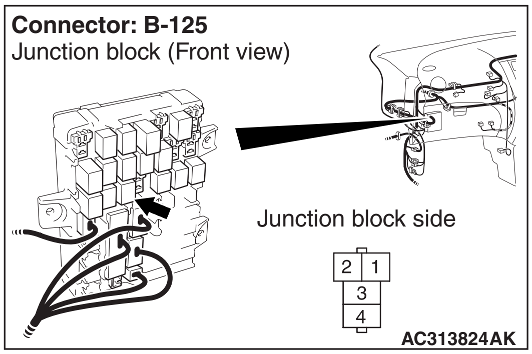
Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

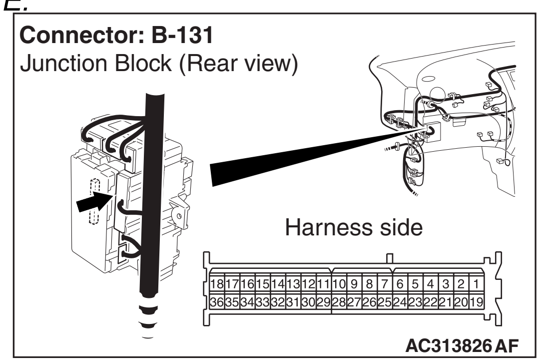
NO : Repair the wiring harness.

Step 10. Check the wiring harness between B-125 rear window defogger relay connector No.2 and B-15 combination meter connector No.13.





NOTE:

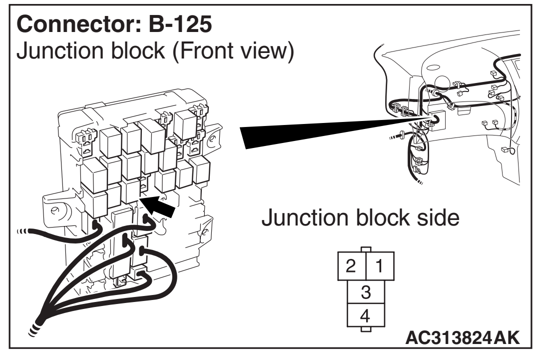


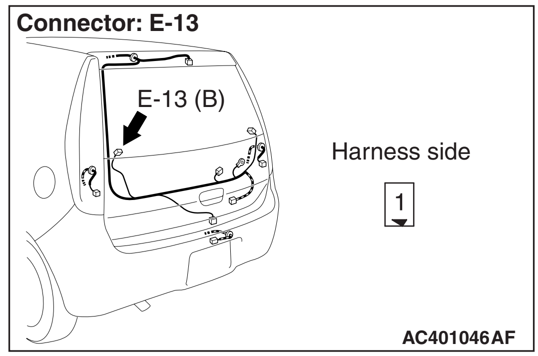
Prior to the wiring harness inspection, check junction block connector B-131, and repair if necessary.

- Check the rear window defogger power supply line for open circuit.

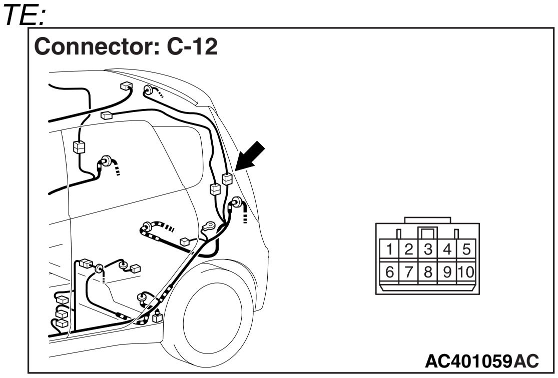
Q: Is the check result normal?
YES : Go to Step 11.
NO : Repair the wiring harness.

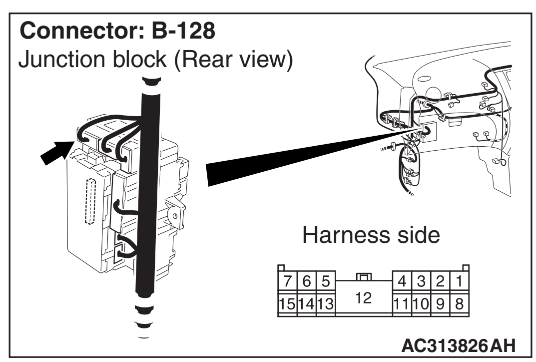
Step 11. Check the wiring harness between B-125 rear window defogger relay connector No.4 and E-13 rear window defogger connector No.1.





NOTE:





Prior to the wiring harness inspection, check junction block connector B-128 and intermediate connector C-12, and repair if necessary.

- Check the rear window defogger relay line for open or short circuit.

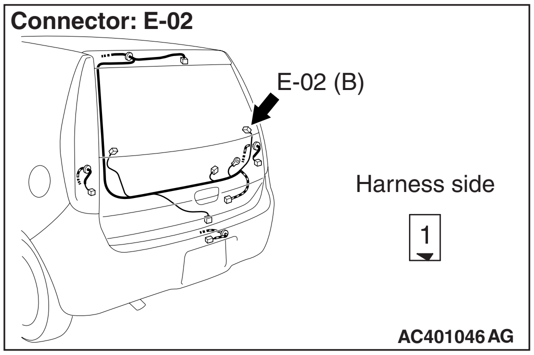
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Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

Step 12. Connector check: E-02 rear window defogger connector

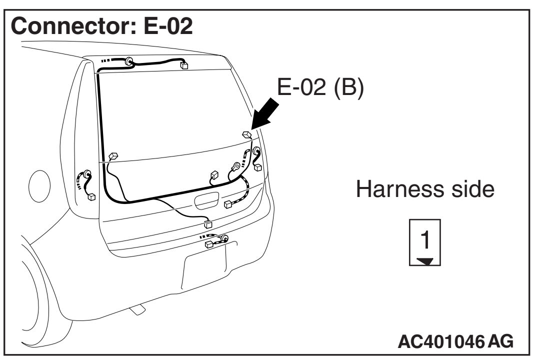


Q: Is the check result normal?

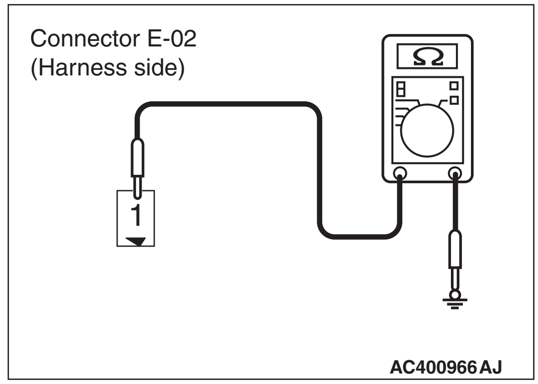
YES : Go to Step 13.

NO : Repair the connector.

Step 13. Resistance measurement at E-02 rear window defogger connector.



(1) Disconnect the connector, and measure at the wiring harness side.



(2) Continuity between terminal 1 and body earth.

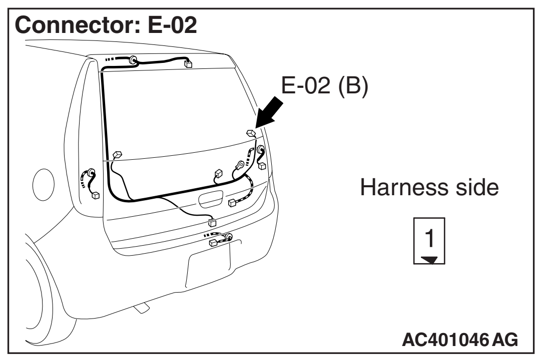
OK: 2Ω or less

Q: Is the check result normal?

YES : Go to Step 15.

NO : Go to Step 14.

Step 14. Check the wiring harness between E-02 rear window defogger connector terminal No.1 and earth.



- Check the rear window defogger earth line for open or short circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair or replace the wiring harness.

Step 15. Check the rear window defogger.

Refer to GROUP 54A, Rear Window rear window defogger Inspection P.54A-122.

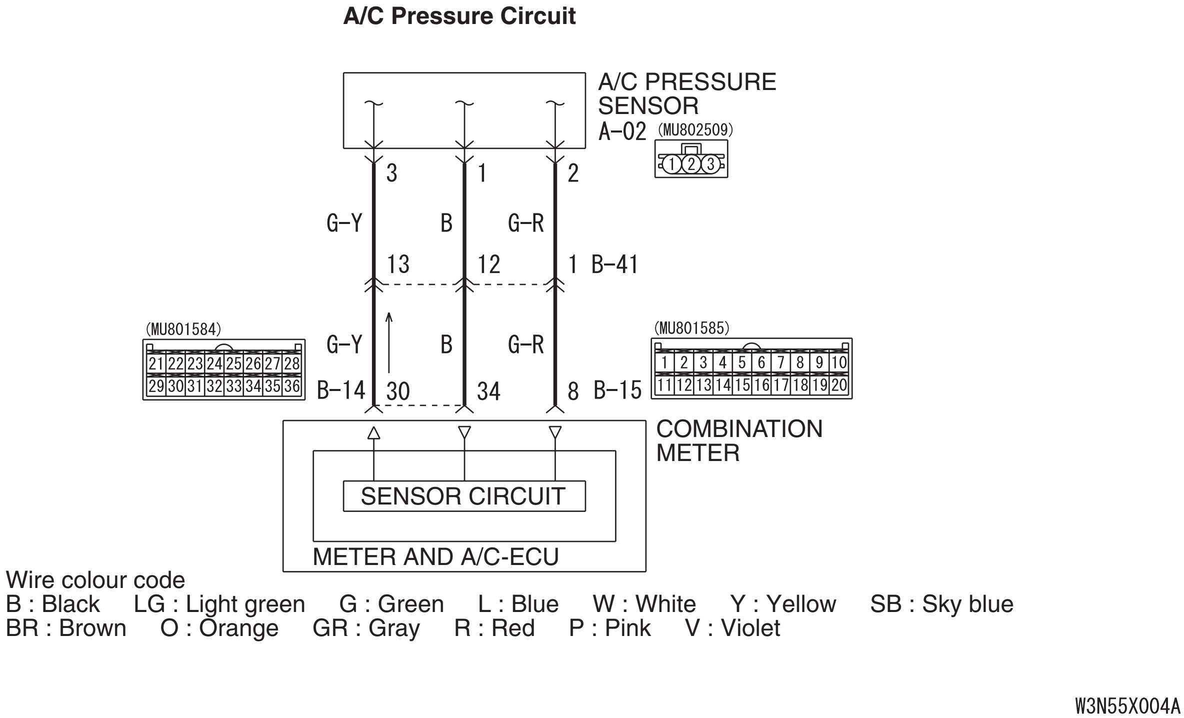
Q: Does the rear window defogger work normally?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the rear window defogger.

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Inspection Procedure 9: The A/C indicator flashes



CIRCUIT OPERATION

If the A/C pressure sensor detects the abnormal refrigerant pressure, the A/C indicator flashes. The inadequate refrigerant quantity or the malfunction of the A/C compressor system is suspected.

TROUBLESHOOTING HINTS

- Inadequate refrigerant level
- Malfunction of the drive belt
- Malfunction of the A/C pressure sensor
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III diagnosis code

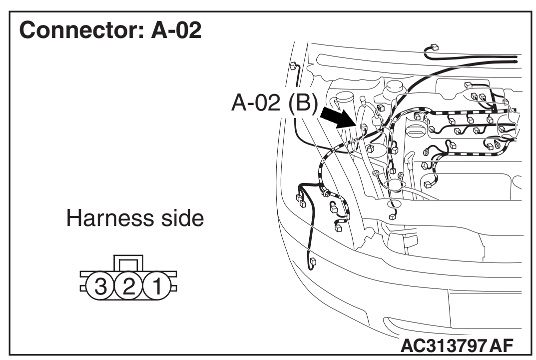
Check that the diagnosis code related to the air conditioner is not set.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Carry out the diagnosis code procedures. Refer to P.55A-5.

Step 2. Connector check: A-02 A/C pressure sensor connector



Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Inspection of A/C pressure sensor

Refer to P.55A-51.

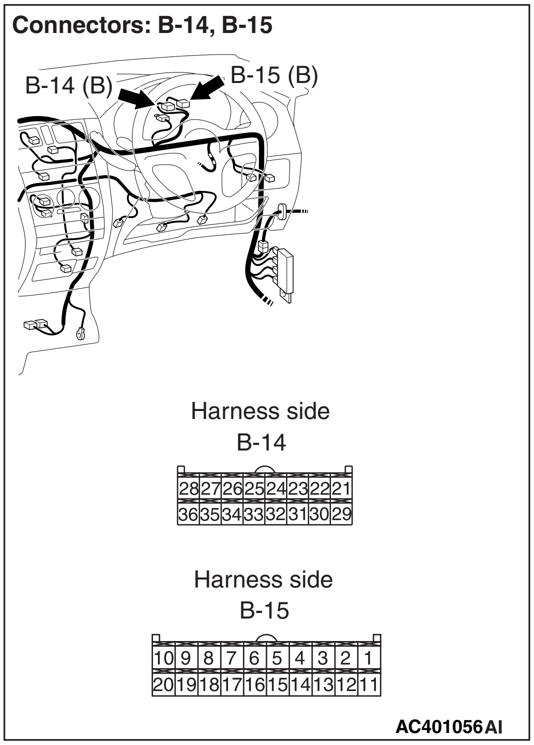
Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the A/C pressure sensor.

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Step 4. Connector check: B-14 and B-15 combination meter connector

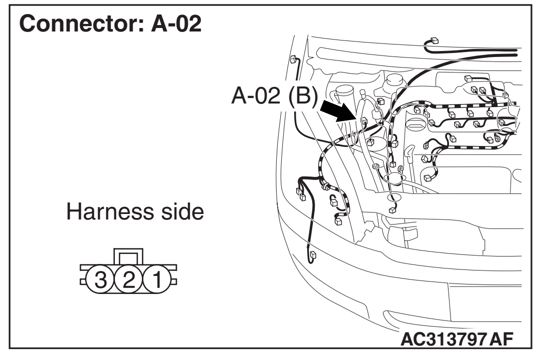


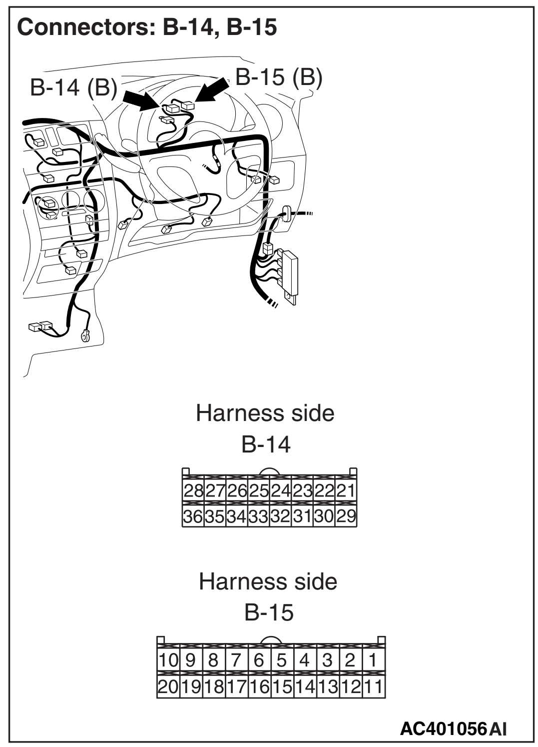
Q: Is the check result normal?

YES : Go to Step 5.

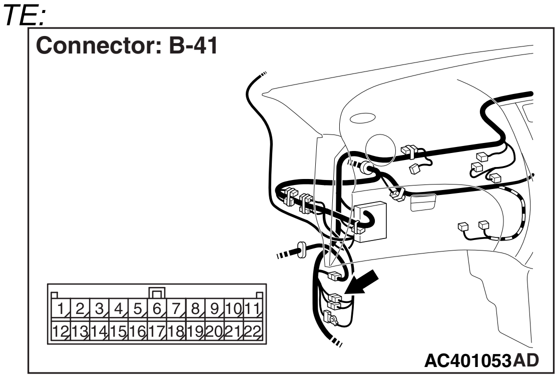
NO : Repair the connector.

Step 5. Check the wiring harness between B-14, B-15 combination meter connector (terminals 8, 34 and 30) and A-02 A/C pressure sensor connector (terminals 2, 1 and 3).





NOTE:



Prior to the wiring harness inspection, check intermediate connector B-41, and repair if necessary.

- Check the input line for open circuit.

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Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the wiring harness.

Step 6. Drive belt tension check

Refer to GROUP 11A – Engine adjustment P.11A-6.

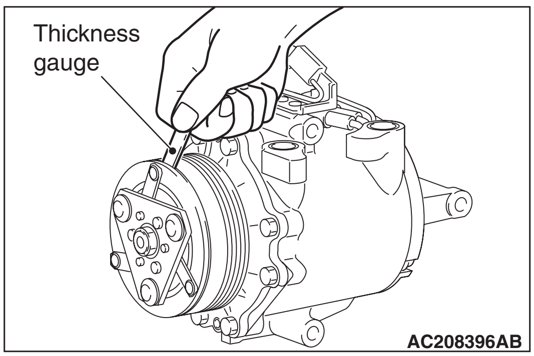
Q: Is the check result normal?
YES : Go to Step 7.
NO : Replace the drive belt.

Step 7. Check the magnetic clutch for A/C compressor

Refer to P.55A-64.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Replace the magnetic clutch.

Step 8. Check the air gap.



Use a feeler gauge and check that the air gap is within the standard value.

Standard value: 0.25 – 0.5 mm

Q: Is the check result normal?
YES : Go to Step 9.
NO : Adjust the air gap.

Step 9. Check the refrigerant temperature switch

(1) Remove the refrigerant temperature switch. Refer to P.55A-65.
(2) Refer to P.55A-66 and check it.

Q: Is the check result normal?
YES : Go to Step 10.
NO : Replace the refrigerant temperature switch.

Step 10. Check the refrigerant level.

Refer to P.55A-50.

Q: Is the refrigerant level correct?
YES : Go to Step 11.
NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-50).

Step 11. Replace the A/C compressor assembly

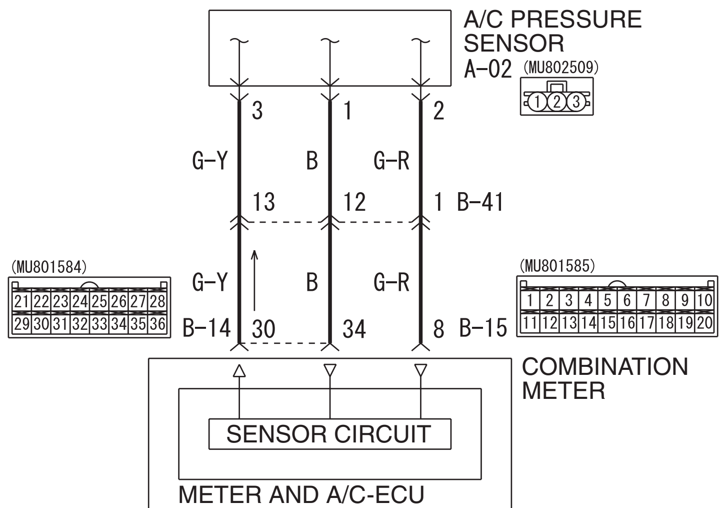
(1) Replace the A/C compressor assembly.
(2) Operates the A/C.
(3) Check that the A/C indicator lamp does not flash.

Q: Is the check result normal?
YES : This diagnosis is complete.
NO : Replace the combination meter (meter and A/C-ECU).

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Inspection Procedure 10: A/C pressure sensor system

A/C Pressure Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3N55X004A

COMMENTS ON TROUBLE SYMPTOM

If the A/C pressure sensor is defective, the damaged wiring harness between the A/C pressure sensor and the combination meter (meter and A/C-ECU) may be suspected.

POSSIBLE CAUSES

- Malfunction of A/C pressure sensor
- Malfunction of the combination meter (meter and A/C-ECU)
- Damaged harness wires and connectors

DIAGNOSIS PROCEDURE

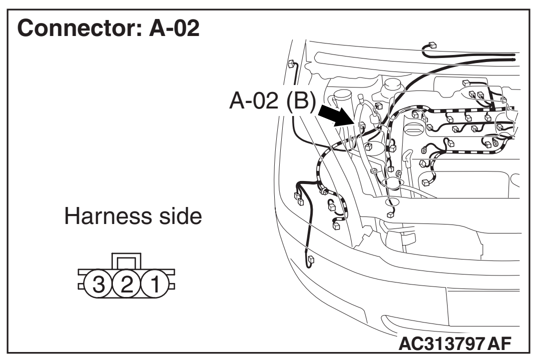
Step 1. M.U.T.-III data list

Check that the following service data display contents are normal. (Refer to P.55A-44.)

- Item 04: Pressure sensor

Q: Is the check result normal?
YES : Go to Step 6.
NO : Go to Step 2.

Step 2. Connector check: A-02 A/C pressure sensor connector



Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

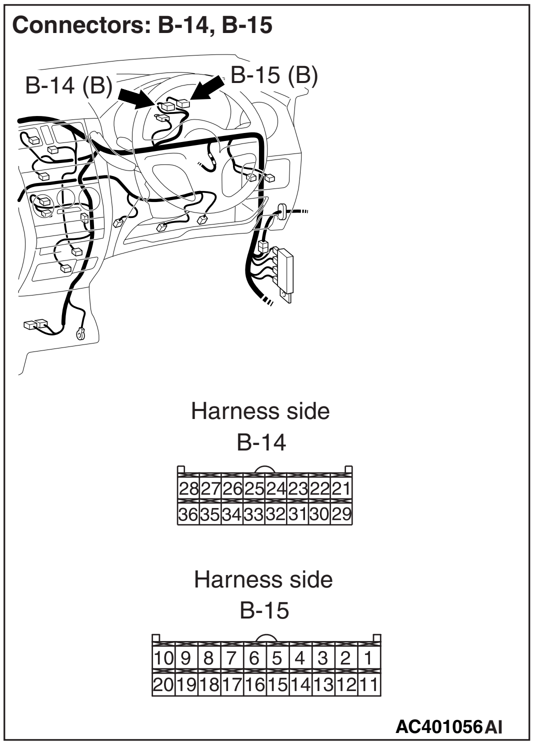
Step 3. Inspection of A/C pressure sensor

Refer to P.55A-51.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Replace the A/C pressure sensor.

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Step 4. Connector check: B-14 and B-15 combination meter connector

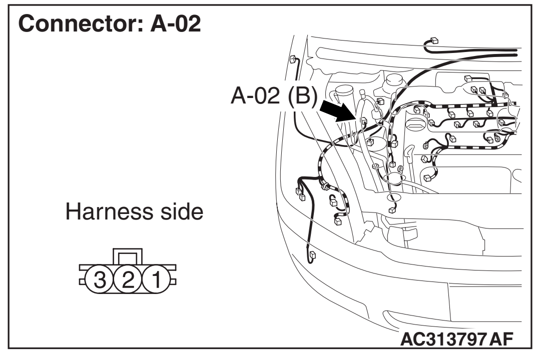


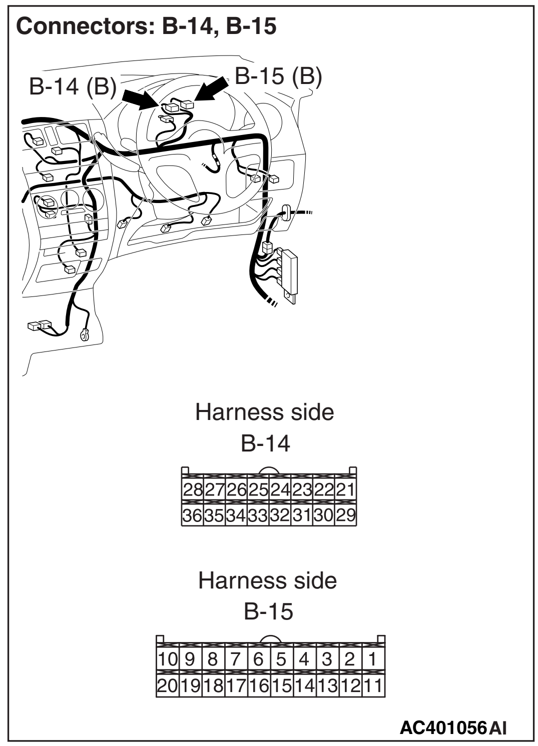
Q: Is the check result normal?

YES : Go to Step 5.

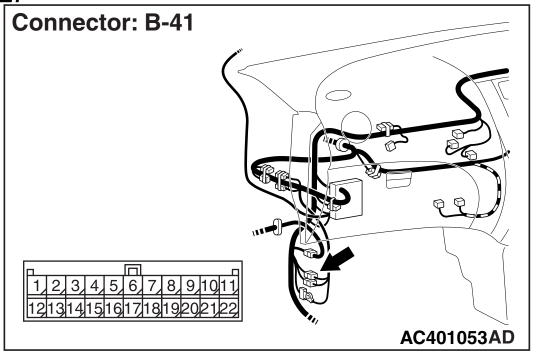
NO : Repair the connector.

Step 5. Check the wiring harness between B-14, B-15 combination meter connector (terminals 8, 34 and 30) and A-02 A/C pressure sensor connector (terminals 2, 1 and 3).





NOTE:



Prior to the wiring harness inspection, check intermediate connector B-41, and repair if necessary.

- Check the input line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

Step 6. Recheck the trouble symptom

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Replace the combination meter (meter and A/C-ECU).

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SERVICE DATA REFERENCE TABLE

M1554005100266

Item No.	Check items	Check contents	
02	Ambient temperature sensor	Ignition switch: ON	Ambient temperature is the same as M.U.T.-III displayed temperature
03	Air thermo sensor	Ignition switch: ON	Evaporator outlet temperature is the same as M.U.T.-III displayed temperature
04	A/C pressure sensor	Ignition switch: ON	According with the chart for simple inspection of the A/C pressure sensor (Refer to GROUP 55, On-vehicle Service P.55A-51).
05	Water temperature sensor	Ignition switch: ON	The coolant temperature is the same as M.U.T.-III displayed temperature
07	Set temperature	Ignition switch: ON	Displays the set temperature
08	Set temperature (control part set value)	Ignition switch: ON	Display the control part set temperature
15	Outside/Inside air selection damper	Ignition switch: ON	Display the outside/inside air selection damper position
20	Blower motor	Ignition switch: ON	Display the rotation speed of blower motor
21	Blower motor (Target)	Ignition switch: ON	Display the target rotation speed of blower motor
30	A/C switch	Ignition switch: ON	Display the A/C switch status
31	A/C switch (control part set value)	Ignition switch: ON	A/C switch status
35	Rear window defogger switch (control part set value)	Ignition switch: ON	Display the rear window defogger switch status
36	Blower switch	Ignition switch: ON	Display the blower switch status
37	Outside/Inside air selection switch	Ignition switch: ON	Display the outside/inside air selection switch status
40	Abnormal low pressure judgement	Ignition switch: ON	Displays the abnormal low pressure judgement
41	Refrigerant leaks judgement	Ignition switch: ON	Display the refrigerant leaks judgement
42	DEF position flag	Ignition switch: ON	Display the DEF position flag
43	Forcible DEF position flag	Ignition switch: ON	Display the forcible DEF position flag
44	Forcible DEF DRY flag	Ignition switch: ON	Display the forcible DEF DRY flag

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ACTUATOR TEST TABLE

M1554005200241

Item No.	Check items	Drive content
01	Blower motor: OFF	Stop
02	Blower motor: 8 speed	Middle speed
03	Blower motor: 16 speed	High speed
30	Outside/Inside air selection damper control motor	Moved to recirculation-side
31		Moved to outside air-side
40	Rear defogger switch	OFF
41		ON
09*	Condenser fan	Stop
0B*		OPERATION
50*	Idle-up requirement	OFF
51*		Low-load
52*		High-load

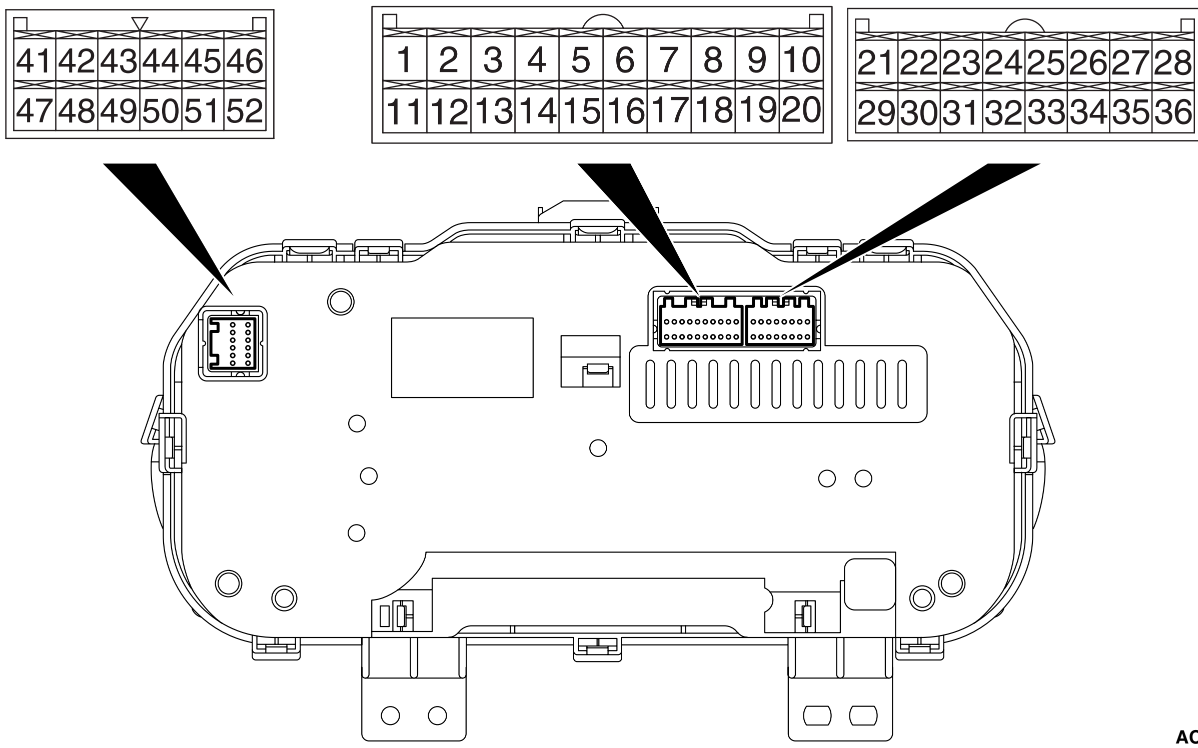
*NOTE: *: Drive at the engine operation*

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CHECK AT COMBINATION METER (METER AND A/C-ECU) TERMINALS

M1552010300787



Terminal No.	Check items	Check conditions	Normal conditions
4	Communication with heater control (Rear defogger switch)	Rear window defogger relay: ON	System voltage
		Rear window defogger relay: OFF	0 V
5	Communication with heater control (Outside/Inside air selection switch)	Outside/Inside air selection switch: ON	System voltage
		Outside/Inside air selection switch: OFF	0 V
6	Communication with heater control (A/C switch)	A/C switch: ON	12 V
		A/C switch: OFF	0 V
7	Blower switch	IG2: ON Blower switch: ON	System voltage
		Blower switch: OFF	0 V
8	Input from the A/C pressure sensor	Refer to P.55A-51	Refer to P.55A-51
9	Air thermo sensor	Sensor probe temperature 25°C (1.5k Ω)	2.2 V
10	Ambient temperature sensor	Sensor probe temperature 25°C (1.5k Ω)	2.2 V

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Terminal No.	Check items	Check conditions	Normal conditions
11	Heater control panel illumination (Outside/Inside air selection switch)	When setting the air recirculation position	12 V
		When setting the fresh air position	0 V
12	Heater control panel illumination (Rear defogger switch)	Defogger switch: ON	12 V
		Defogger switch: OFF	0 V
13	Rear defogger relay	IG2: ON	System voltage
15	Sensor earth	Always	0 V
16	Outside/Inside air selection damper control motor	When the damper is moved to the inside air recirculation position	0 V
		When the damper is moved to the fresh air position	System voltage
17	Outside/Inside air selection damper control motor	When the damper is moved to the inside air recirculation position	System voltage
		When the damper is moved to the fresh air position	0 V
18	Heater control panel illumination (A/C switch)	A/C switch: ON	12 V
		A/C switch: OFF	0 V
29	Heater control power supply	IG2: ON	12 V
30	A/C pressure sensor power supply	IG2: ON	5 V
31	Ignition switch (IG1) power supply	IG1: ON	System voltage
32	Ignition switch (IG2) power supply	IG2: ON	System voltage
33	Battery power supply	Always	System voltage
34	A/C pressure sensor earth	Always	0 V
35	Heater control earth	Always	0 V

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Group TOC

ON-VEHICLE SERVICE

COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001000487

Refer to GROUP 11A, On-vehicle Service – Drive Belt Tension Check P.11A-6.

DISCHARGING SYSTEM

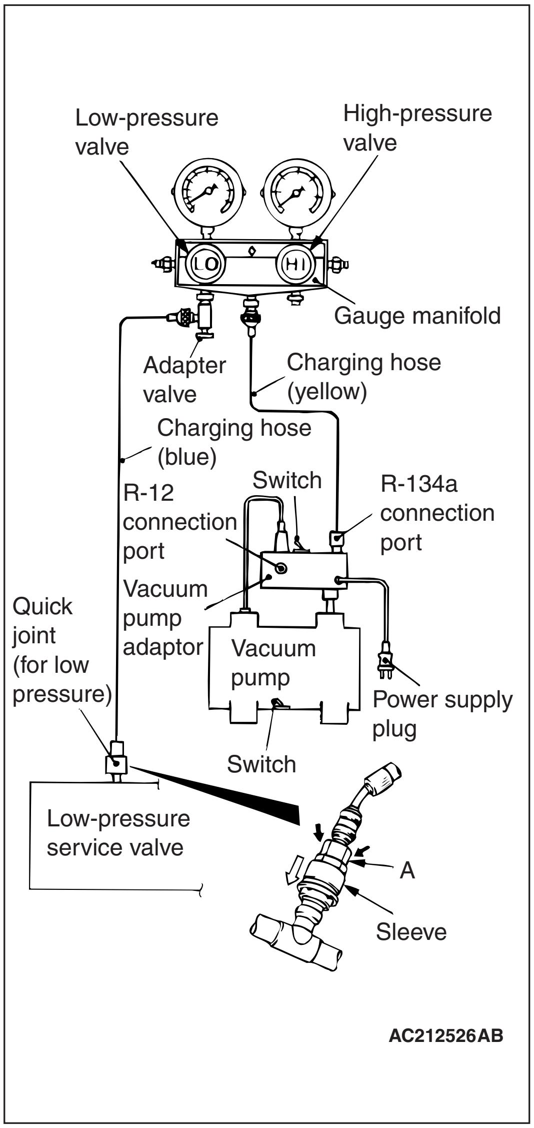
M1552013000202

Use the refrigerant recovery unit to discharge refrigerant gas front the system.

NOTE: Refer to the Refrigerant Recovery and Recycling Unit instruction Manual for operation of the unit.

CHARGING

M1552001200511



1. With the handles turned back all the way (valve closed), install the adaptor valve to the low-pressure side of the gauge manifold.
2. Connect the charging hose (blue) to the adaptor valve.
3. Connect the quick joint (for low-pressure) to the charging hose (blue).

⚠ CAUTION

- **Use tools that are suited to R134a.**
- **To install the quick joint, press section when connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**

4. Connect the quick joint (for low-pressure) to the low- pressure service valve.

   NOTE: The low-pressure service valve should be connected to the flexible suction hose.
5. Close the high and low-pressure valves of the gauge manifold.

⚠ CAUTION

Be sure to connect the power plug of the vacuum pump to the vacuum pump adapter, and then connect the power plug of the adapter to a 100-V outlet.

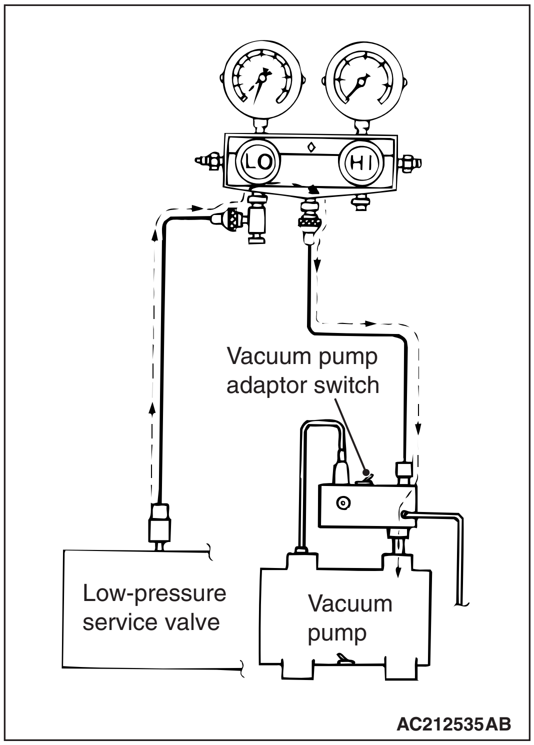
6. Install the vacuum pump adaptor to the vacuum pump.
7. Connect the charging hose (yellow) to the R-134a connection port of the vacuum pump adaptor.
8. Tighten the adaptor valve handle (valve open).
9. Open the low-pressure valve of the gauge manifold.
10. Turn the power switch of the vacuum pump to the ON position.

    NOTE: Even if the vacuum pump power switch is turned ON, the vacuum pump will not operate because of the power supply connection in step (6).

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⚠ CAUTION

Do not operate the compressor for evacuation.



11.Turn the vacuum pump adaptor switch to the R134a side to start the vacuum pump.

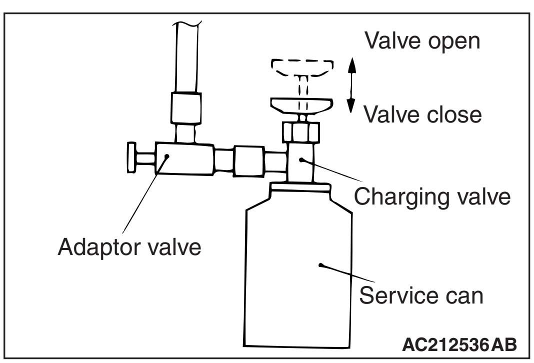
12.Evacuate to a vacuum reading of 100 kPa or higher (takes approx. 10 minutes).

⚠ CAUTION

Do not operate the compressor in the vacuum condition; damage may occur.

13.Loosen the valve of the adapter valve fully (valve closed), and turn off the vacuum pump adapter switch. Then leave it for five minutes.

14.Check the system for proper sealing (negative pressure should not decrease).



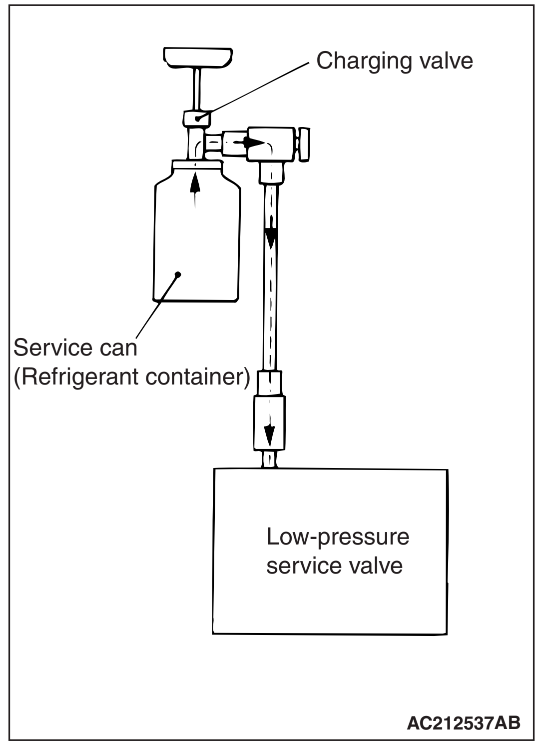
15.Connect the service can valve to the service can with the handle loosened fully (valve closed).

16.Turn the handle of the adaptor valve back all the way (valve closed), remove it from the gauge manifold and install the service can.

17.Tighten the handle of the charging valve (valve closed) to puncture the service can.

⚠ CAUTION

If the service can is inverted, liquid refrigerant may be drawn into the compressor damaging it by liquid compression. Keep the service can upright to ensure that refrigerant is charged in gas state.



18.Turn the handle of the charging valve back (valve open) and tighten the handle of the adaptor valve (valve open) to charge the system with refrigerant.

19.If the refrigerant is not drawn in, turn the handle of the adaptor valve back all the way (valve closed).

20.Check for gas leaks using a leak detector. If a gas leak is detected, re-tighten the connections, and then repeat the charging procedure from evacuation in step (11).

⚠ CAUTION

The leak detector for R-134a should be used.

21.Start the engine.

22.Operate the A/C and set to the lowest temperature (MAX. COOL).

23.Fix the engine speed at 1,500 r/min.

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Group TOC

⚠ CAUTION

If the service can is inverted, liquid refrigerant may be drawn into the compressor damaging it by liquid compression. Keep the service can upright to ensure that refrigerant is charged in gas state.

24. Tighten the handle of the adaptor valve (valve open) to charge the required volume of refrigerant.
25. After charging with refrigerant, turn the handle of the adaptor valve back all the way (valve closed).
26. Tighten the charging valve handle (valve closed). Remove the quick joint (for low-pressure) from the low-pressure service valve.
27. Remove the service can.

    NOTE: If the service can is not emptied completely, keep the handles of the charging valve and adaptor valve closed for the next charging.

CHECK THE REFRIGERANT LEVEL

M1552021700057

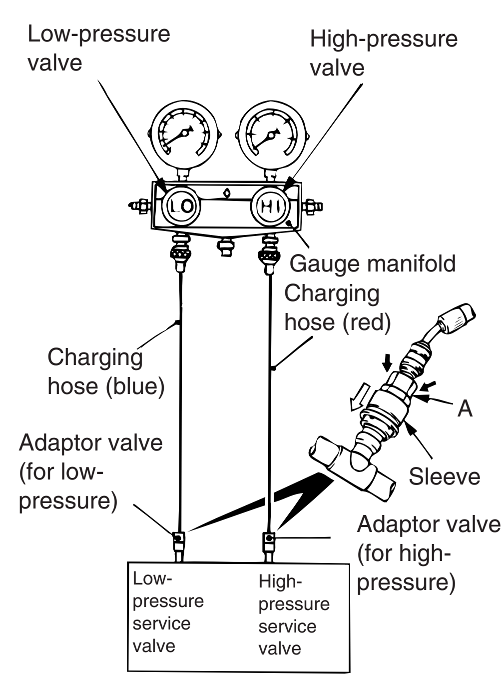
Remove the refrigerant by the flon reclaim machine and replenish the specified quantity of refrigerant.

NOTE: Refer to the Refrigerant Recovery and Recycling Unit instruction Manual for operation of the unit.

PERFORMANCE TEST

M1552001400537

1. The vehicles to be tested should be in a place that is not in direct sunlight.



AC001388AB

2. Close the high and low-pressure valve of the gauge manifold.
3. Connect the charging hose (blue) to the low-pressure valve and connect the charging hose (red) to the high-pressure valve of the gauge manifold.

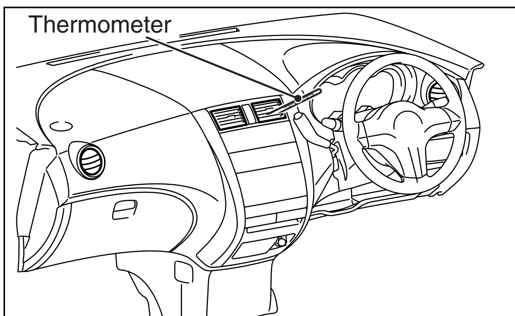
⚠ CAUTION

- **To connect the quick joint, press section A firmly against the service valve until a click is heard.**
- **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**

4. Install the quick joint (for low-pressure) to the charging hose (blue), and connect the quick joint (for high-pressure) to the charging hose (red).

   NOTE: The high-pressure service valve is on the A/C pipe and the low-pressure service valve is on the suction hose.

5. Connect the quick joint (for low-pressure) to the low-pressure service valve and connect the quick joint (for high-pressure) to the high-pressure service valve.
6. Start the engine.
7. Set the A/C controls as follows:
   - A/C switch: A/C – ON position
   - Mode selection: FACE position
   - Temperature control: MAXIMUM COOLING position
   - Air selection: RECIRCULATION position
   - Blower switch: Fast position
8. Adjust engine speed to 1,500 r/min with A/C clutch engaged.
9. Engine should be warmed up with doors and windows opened.



AC314114AB

10. Insert a thermometer in the centre air outlet and operate the engine for 20 minutes.

NOTE: If the clutch cycles, take the reading before the clutch disengages.

11. Note the discharge air temperature.

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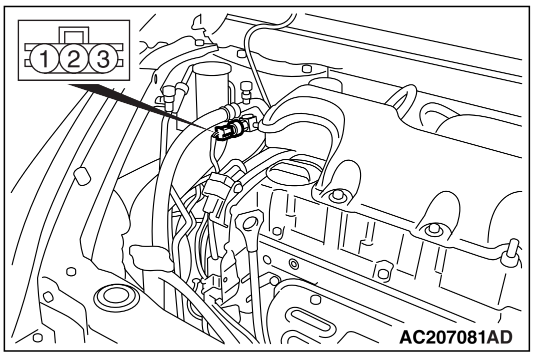
PERFORMANCE TEMPERATURE CHART

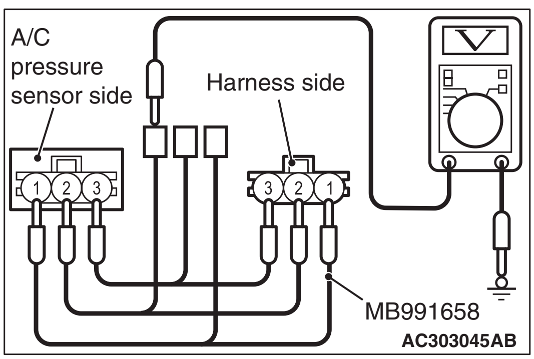
Garage ambient temperature °C	20	25	30	35
Discharge air temperature °C	3.5 – 5.5	3.5 – 5.5	4.5 – 6.5	5.5 – 7.5
Compressor high pressure kPa	1, 050 – 1, 250	1, 050 – 1, 250	1,400 – 1,600	1,650 – 1,850
Compressor low pressure kPa	120 – 140	120 – 140	130 – 150	160 – 180

SIMPLE INSPECTION OF THE A/C PRESSURE SENSOR

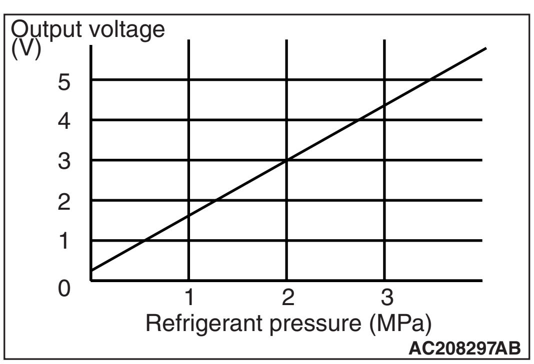
M1552014700226

1. Assemble a gauge manifold on the high pressure service valve.





2. Disconnect the A/C pressure sensor connector and connect the special tool test harness (MB991658) as shown.
3. Start the engine and then turn ON the air conditioner switch.



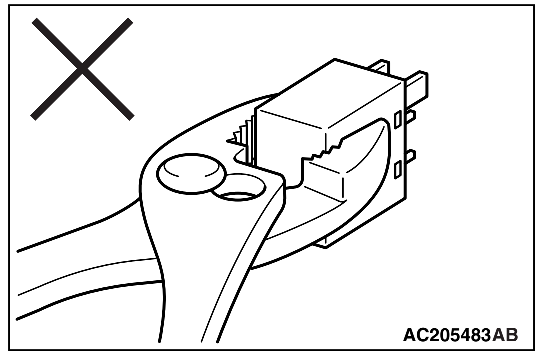
4. At this time, check to see that the voltage of the A/C pressure sensor connector terminal No. 2 reflects the specifications of the figure.

   NOTE: The allowance shall be defined as ±5%.

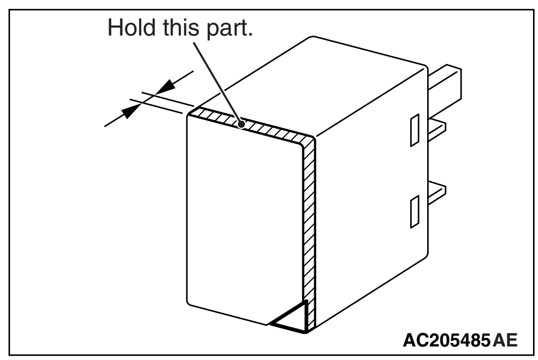
REPLACE THE A/C COMPRESSOR RELAY

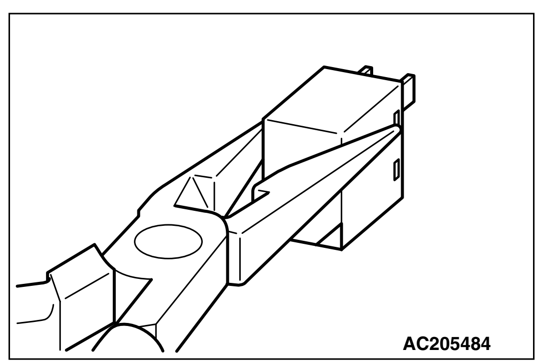
M1552019100069

⚠ CAUTION



Basically, remove or install the relay by hand. If the centre of relay has been pinched by pliers, it can be damaged.





1. Remove the relay by hand. If it cannot be removed by hand, pinch the relay shown with long-nose pliers and remove the relay.
2. Install the new relay by hand.

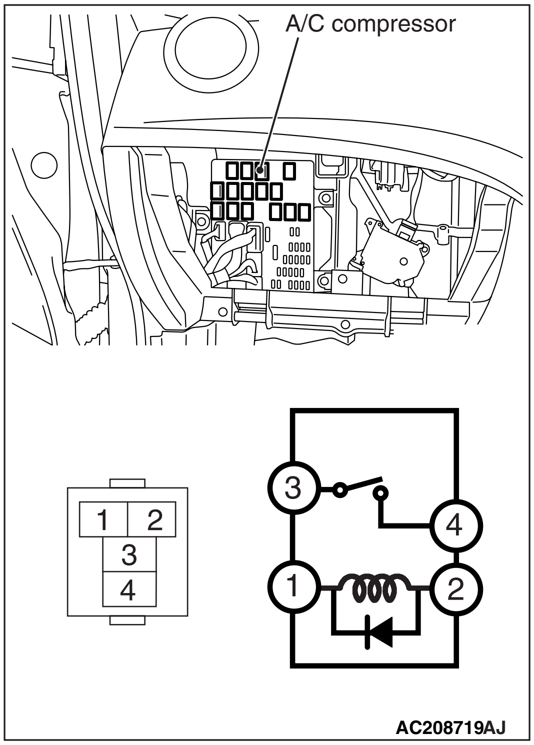
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RELAY CONTINUITY CHECK

M1552008800503

A/C COMPRESSOR RELAY CONTINUITY CHECK

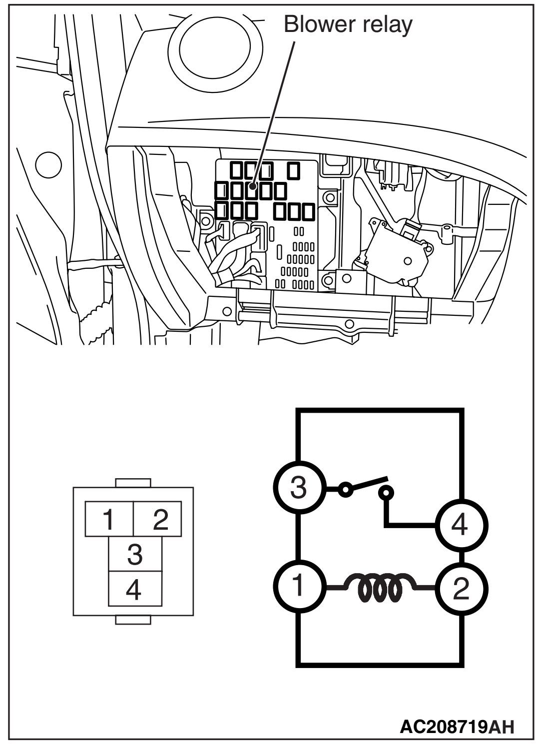
⚠ CAUTION



Ensure the correct polarity to prevent the damage to a diode.

Battery voltage	Tester connection	Specified condition
Not applied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity (Less than 2Ω)

BLOWER RELAY CONTINUITY CHECK



Battery voltage	Tester connection	Specified condition
Not applied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity (Less than 2Ω)

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Group TOC

IDLE-UP OPERATION CHECK

M1552001600553

1. Before inspection and adjustment, set vehicle in the following condition:
- Engine coolant temperature: 80 – 90 °C
- Lamps, electric cooling fan and accessories: Set to OFF
- Transmission: Neutral ("N" or "P" for vehicles with A/T)
- Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value.

   Refer to GROUP 11A, On-vehicle Service – Basic Idle Speed Adjustment P.11A-9.

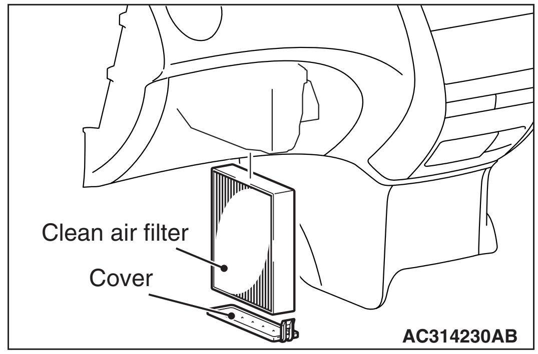
   Standard value: 700 ± 50 r/min
3. When the A/C is running after turning the A/C switch to ON, and the blower switch to the 3(MH) or 4(HI) position, check to be sure that the idle speed is at the standard value.

   Standard value: 850 ± 100 r/min

   NOTE: . It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system.

CLEAN AIR FILTER REPLACEMENT PROCEDURE

M1552020100171



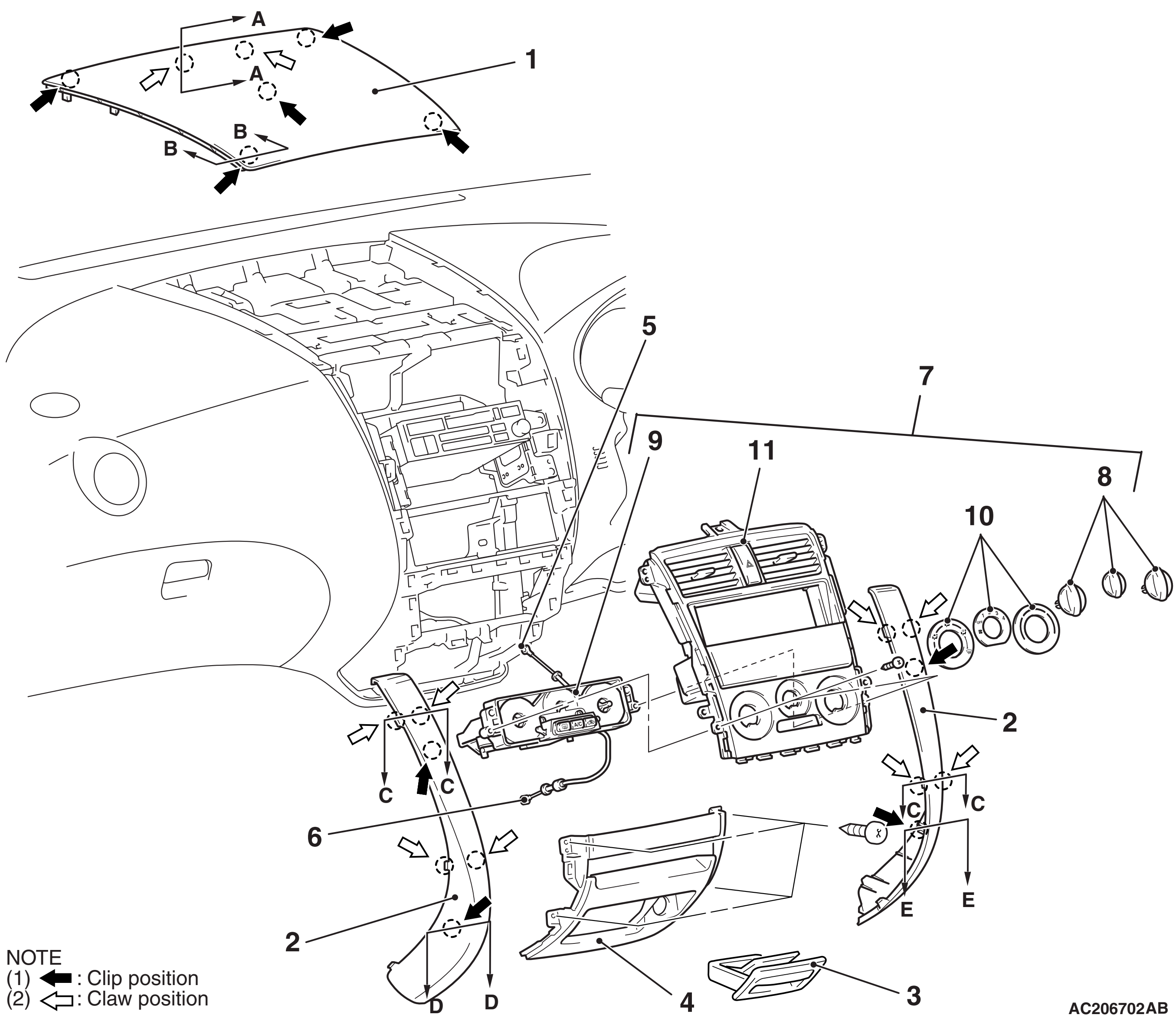
Remove the cover from the lower side of the front passenger to extract the clean air filter.

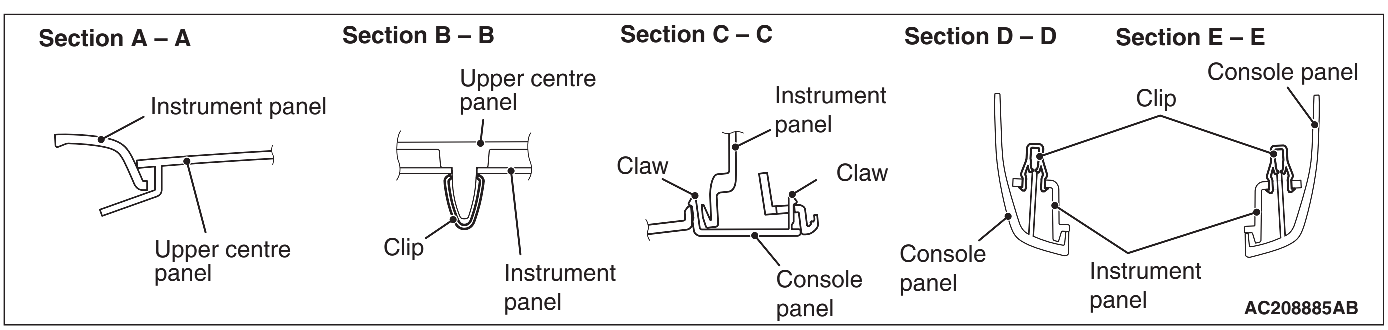
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HEATER CONTROL ASSEMBLY AND A/C SWITCH

REMOVAL AND INSTALLATION

M1552002400477





Removal steps

1. Upper centre panel
2. Console panel
3. Ashtray
4. Lower centre panel

>>**B**<< 5. Mode selection damper control cable connection

Removal steps (Continued)

>>**A**<< 6. Air mixing damper control cable connection

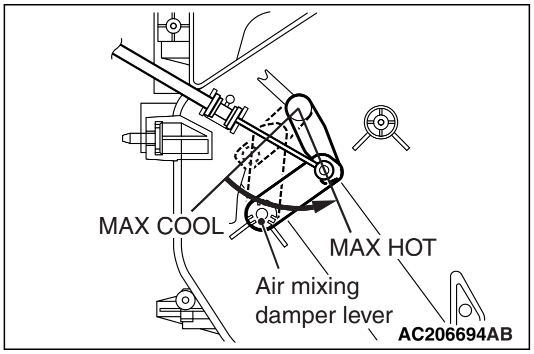
7. Heater control panel assembly
8. Knob
9. Heater control assembly

Removal steps (Continued)

10. Mode label
11. Heater control panel

INSTALLATION SERVICE POINT

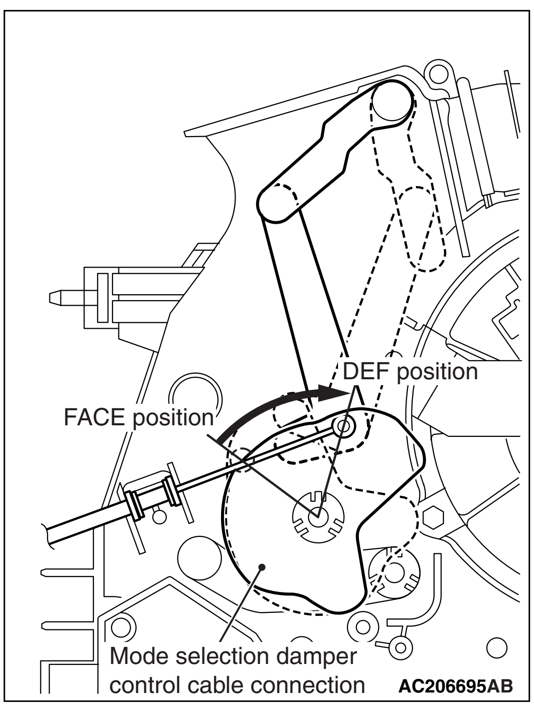
>>A<< AIR MIXING DAMPER CONTROL CABLE CONNECTION



AC206694AB

1. Turn the temperature control knob of heater control assembly to the HOT side fully.
2. Turn the air mix damper lever of heater unit to the MAX HOT position (Turn the damper lever to the right until it stops.) and then install the cable.
3. Install the cable to the clip and fix it while aligning the case.

>>B<< MODE SELECTION DAMPER CONTROL CABLE CONNECTION



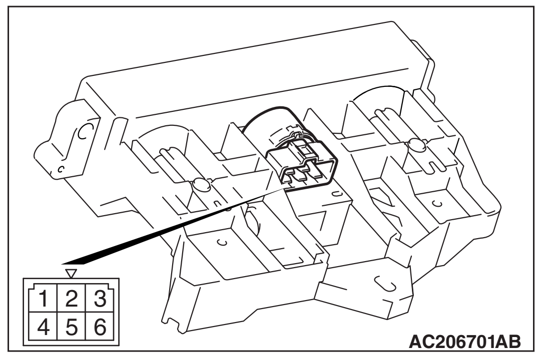
AC206695AB

1. Set the air outlet changeover knob of the heater control assembly to DEF position.
2. Turn the air outlet changeover damper lever of heater unit to the DEF position (Turn the damper lever to the left until it stops.) and then install the cable.
3. Install the cable to the clip and fix it while aligning the case.

INSPECTION

M1552002500184

BLOWER SWITCH CONTINUITY CHECK



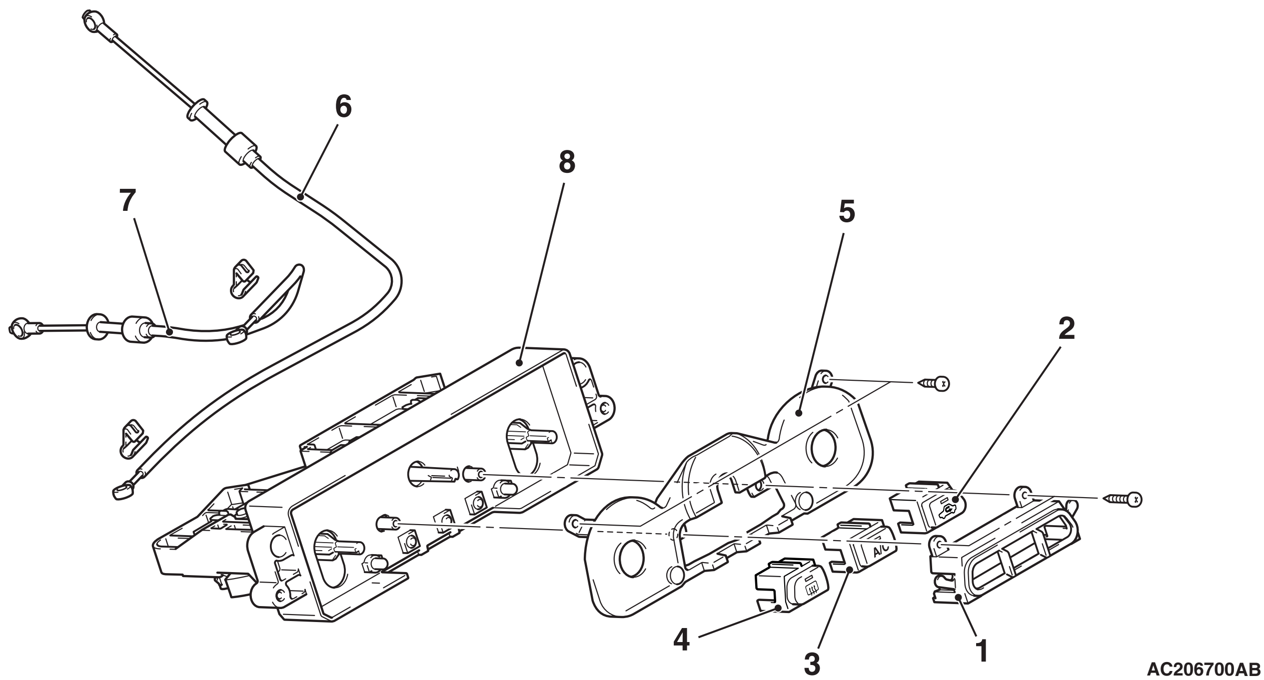
AC206701AB

Switch position	Tester connection	Specified condition
OFF	1 – 2, 2 – 4, 2 – 5, 2 - 6	Open circuit
1	1 – 2	Continuity (Less than 2Ω)
2	2 – 4	
3	2 – 5	
4	2 – 6	

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DISASSEMBLY AND REASSEMBLY

M1552014200265

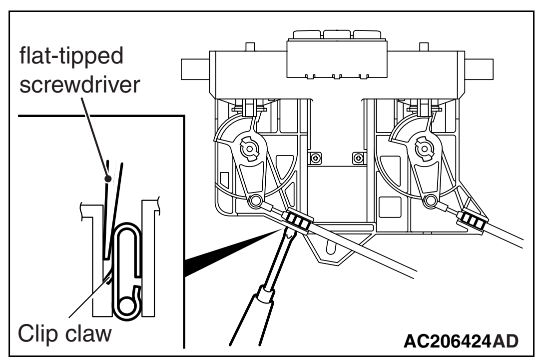


Disassembly steps

1. Switch panel
2. Outside/Inside air selection switch
3. A/C switch
4. Rear window defogger switch
5. Prism
6. Mode selection damper control cable <<**A**>>
7. Air mixing damper control cable <<**A**>>
8. Heater control

DISASSEMBLY SERVICE POINT

<<A>> MODE SELECTION DAMPER CONTROL CABLE AND AIR MIXING DAMPER CONTROL CABLE REMOVAL



To remove the damper cable, insert the flat-tipped screwdriver from the inside of control base to the clip and remove the clip claw.

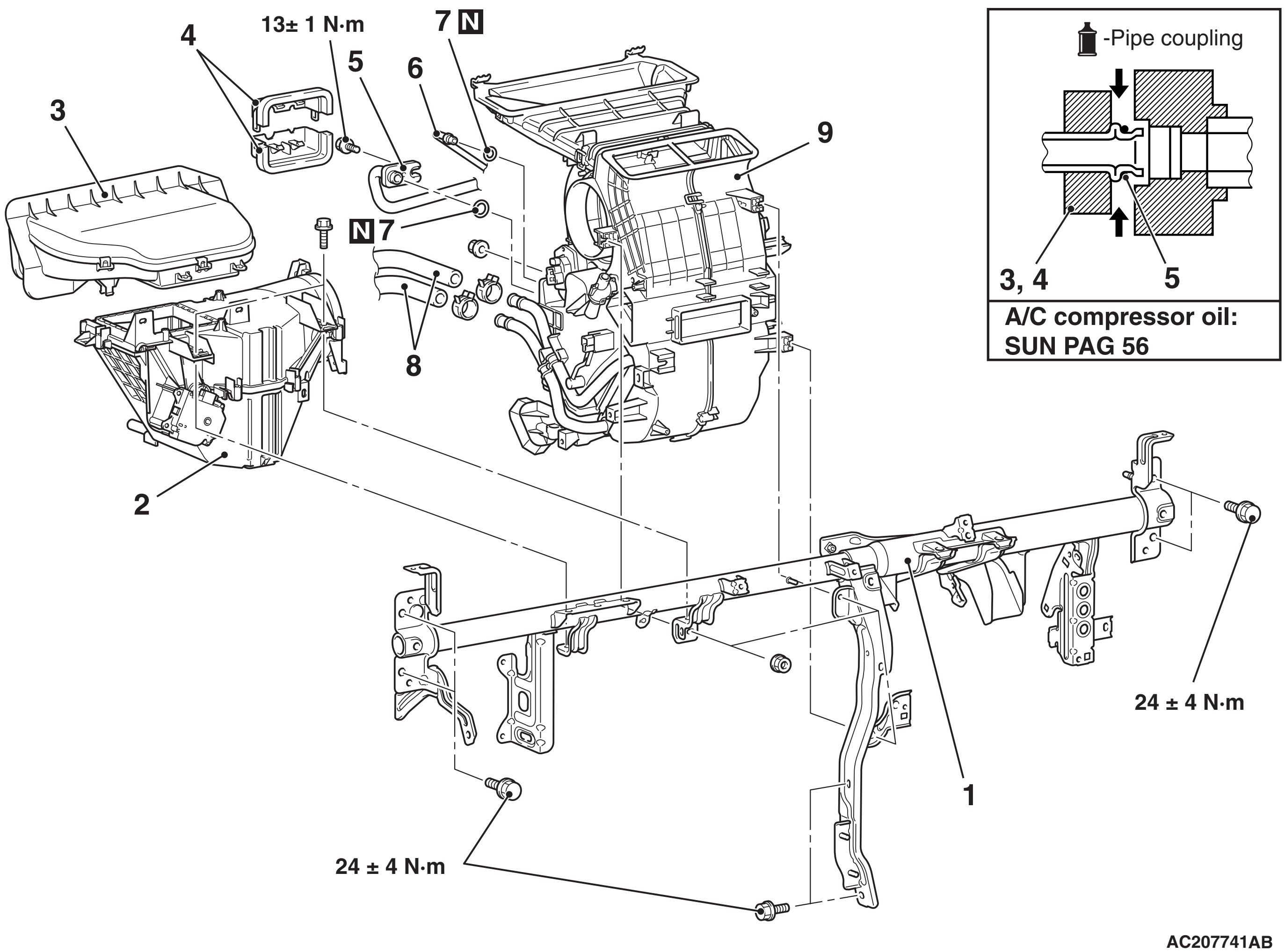
HEATER UNIT AND COOLING UNIT

REMOVAL AND INSTALLATION

M1559900900050

Pre-removal and Post-installation Operation

- Engine coolant Draining and Refilling (Refer to P.14-4.)
- Refrigerant draining and Refilling (Refer to Charging P.55A-48, Discharging P.55A-48.)
- Instrument Panel Removal and Installation (Refer to P.52A-3.)



Removal steps

- Harness and clamp
- Junction block installation

1. Front deck crossmember assembly
2. Air intake box
3. Air intake duct

- Air cleaner cover and engine air intake hose (Refer to GROUP 15, Air cleaner P.15-5.)
- Canister installation

4. Expansion valve cover

<<A>> 5. Flexible suction hose connection

<<A>> 6. Liquid pipe B connection

7. O-ring

Removal steps (Continued)

8. Heater hose
9. Heater unit assembly

REMOVAL SERVICE POINT

<<A>> FLEXIBLE SUCTION HOSE AND LIQUID PIPE B DISCONNECTION

⚠ CAUTION

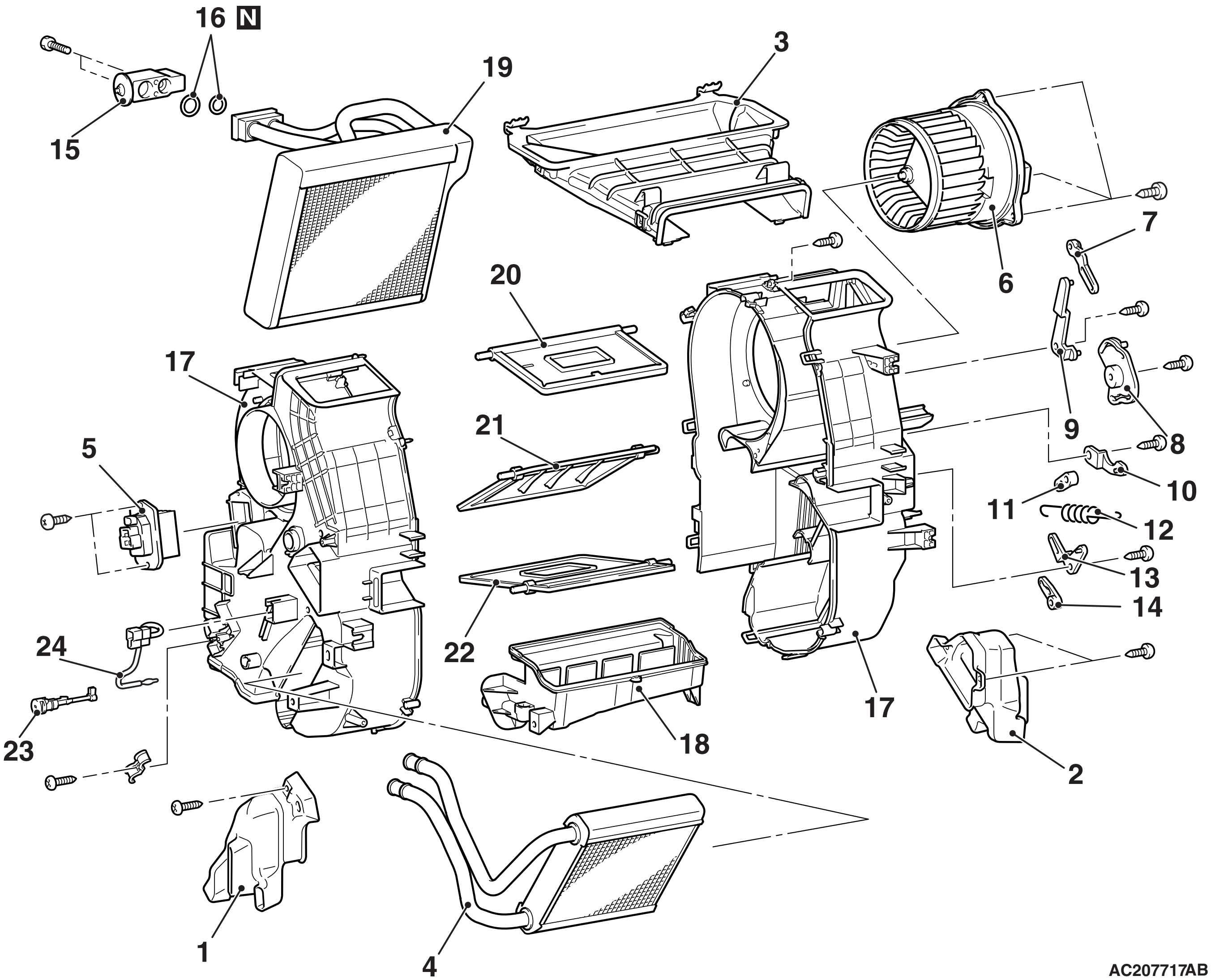
Use the plug which is not breathable because A/C compressor oil or receiver have high hygroscopicity.

Plug the removed nipple of the pipe, hose and expansion valve to prevent the entry of dust and dirt.

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DISASSEMBLY AND REASSEMBLY

M1551005400376



Disassembly steps

1. Foot heater duct LH
2. Foot heater duct RH
3. Heater joint duct
4. Heater core
5. Resistor
6. Blower motor
7. FACE/DEF plate
8. Mode main plate
9. FACE/DEF sub plate
10. Foot sub plate
11. Foot plate
12. Heater control panel support spring
13. Air mixing plate
14. Air mixing main plate
15. Expansion valve
16. O-ring

Disassembly steps (Continued)

>>**A**<< 17. Heater case
18. Heater lower case
19. Evaporator
20. Mode selection damper (FACE)
21. Mode selection damper (FOOT)
22. Air mixing damper
23. Air thermo sensor clip
24. Air thermo sensor

DISASSEMBLY SERVICE POINT

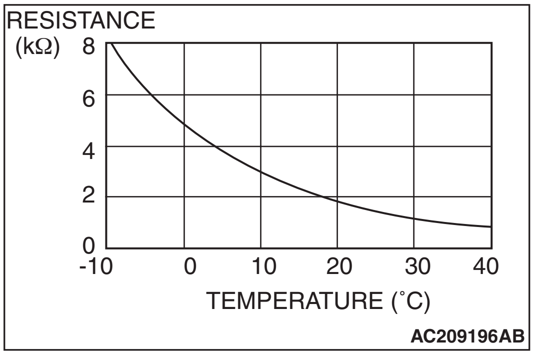
>>A<< HEATER CASE ASSEMBLY

Fix the area, which the heater case is installed by claw, with tapping screw when installing.

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AIR THERMO SENSOR CHECK

M1552009200117

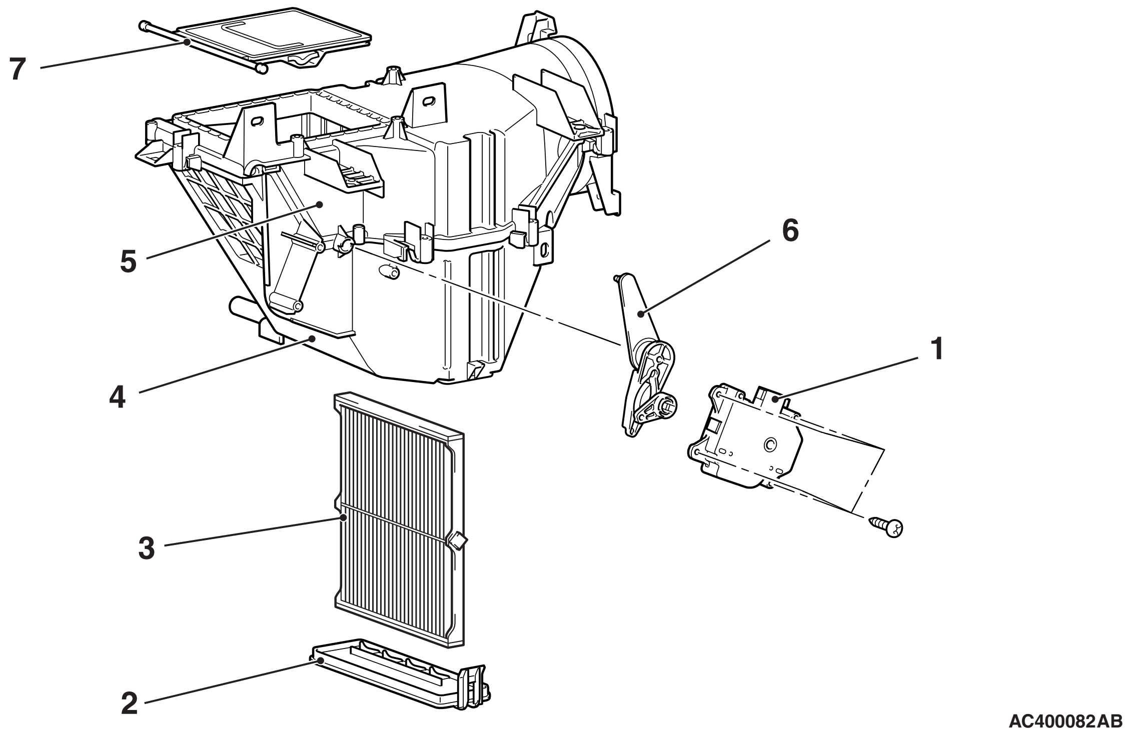


Check that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

NOTE: The temperature condition in checking should be within the range shown.

DISASSEMBLY AND REASSEMBLY

M1559901000038



Disassembly steps

1. Outside/Inside air selection damper control motor
2. Under cover
3. Clean air filter
4. Lower case
5. Upper case (>>**A**<<)
6. Outside/Inside air selection plate
7. Outside/Inside air selection damper

DISASSEMBLY SERVICE POINT

>>A<< CASE ASSEMBLY

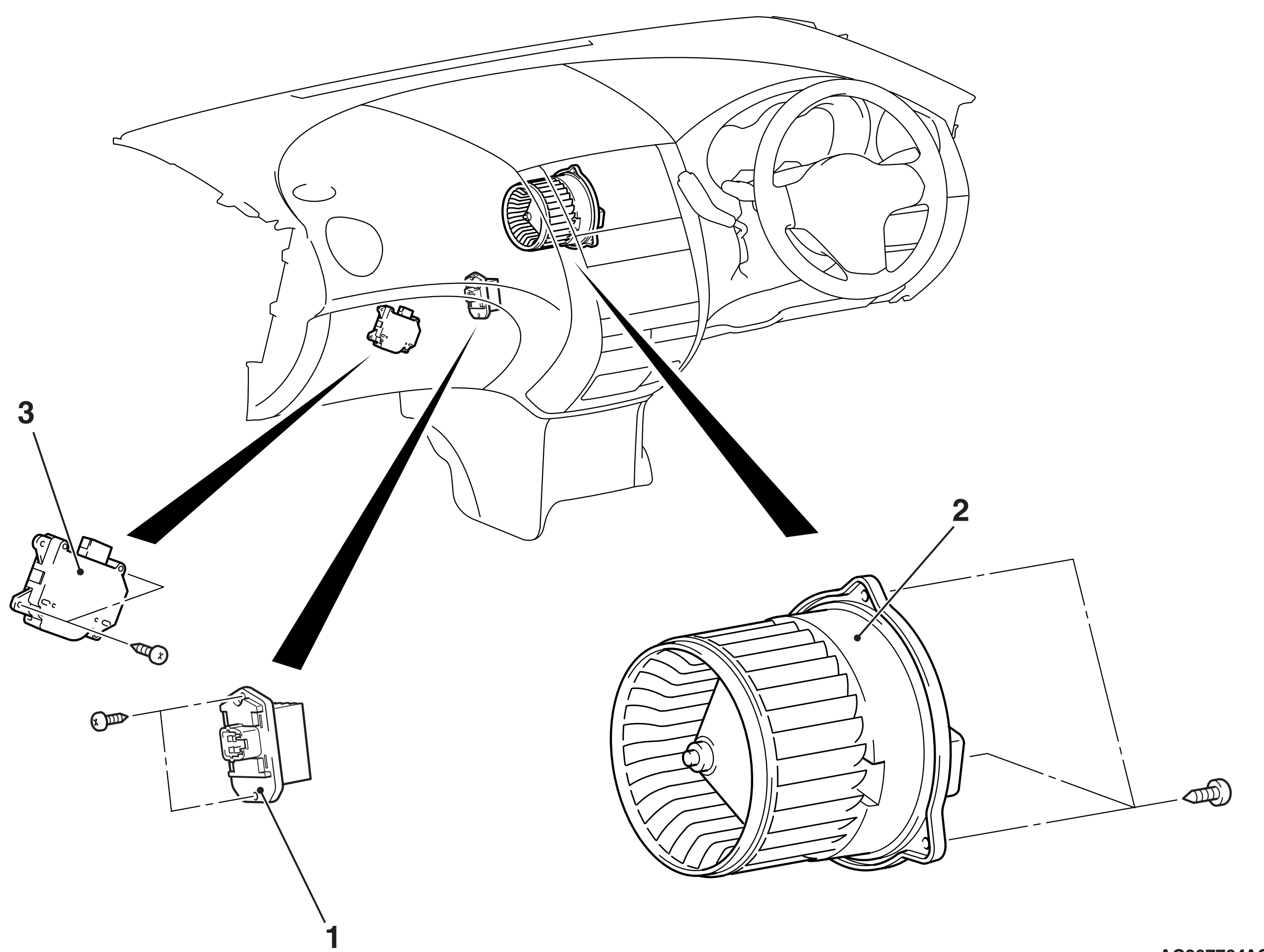
Fix the area, which the heater case is installed by claw, with tapping screw when installing.

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Group TOC

RESISTOR, BLOWER MOTOR AND OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR

REMOVAL AND INSTALLATION

M1552015200105



Resistor removal step

- Glove box (Refer to GROUP 52A, Instrument Panel P.52A-3.)
- Front scuff plate and cowl side trim (Refer to GROUP 52A, Interior Trim P.52A-11.)

<<A>> 1. Resistor

Blower motor removal step

- Parking brake pedal assembly (GROUP 36, Parking Brake Pedal P.36-6.)
- Transmission control cable dash panel side installation (Refer to GROUP 23, Transmission control P.23A-146.)

Blower motor removal step

- Diagnosis connector bracket
- Foot heater duct LH (Refer to P.55A-69.)

2. Blower motor

Outside/Inside air selection damper control motor removal step

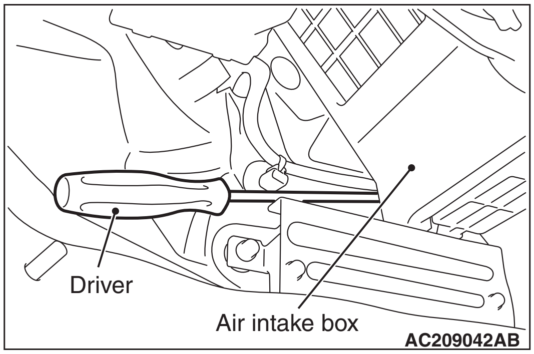
- Glove box (Refer to GROUP 52A, Instrument Panel P.52A-3.)

3. Outside/Inside air selection damper control motor

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REMOVAL SERVICE POINT

<<A>> RESISTOR REMOVAL

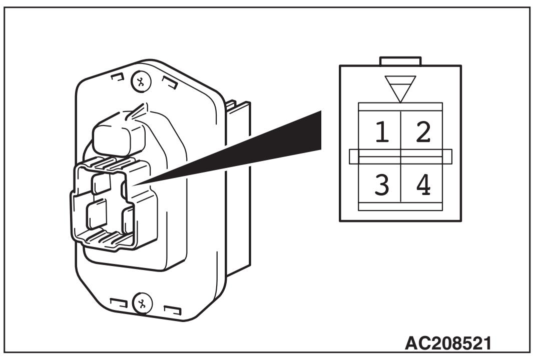


To remove the resistor, insert the screwdriver from the back of air intake box.

INSPECTION

M1552015600084

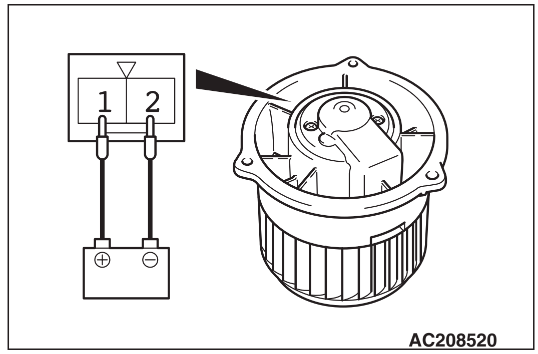
RESISTER CHECK



STANDARD VALUE:

Measurement terminal	Standard value (Ω)
Between terminal Nos. 2 and 3	2.45
Between terminal Nos. 1 and 2	0.95
Between terminal Nos. 2 and 4	0.27

BLOWER FAN AND MOTOR CHECK

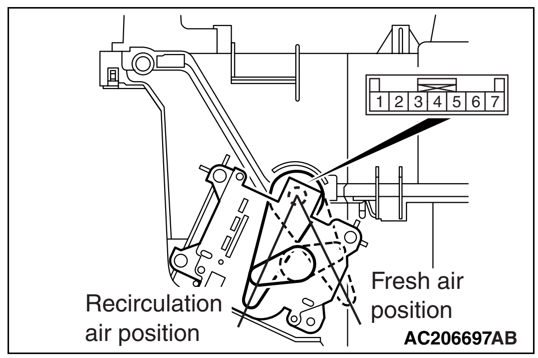


Check that the motor turns when applying battery power between the connector terminals. Also check to see that there is no abnormal sound emitted from the motor at this time.

OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR CHECK

⚠ CAUTION

Stop energizing when the lever is set to the operation stopping position.



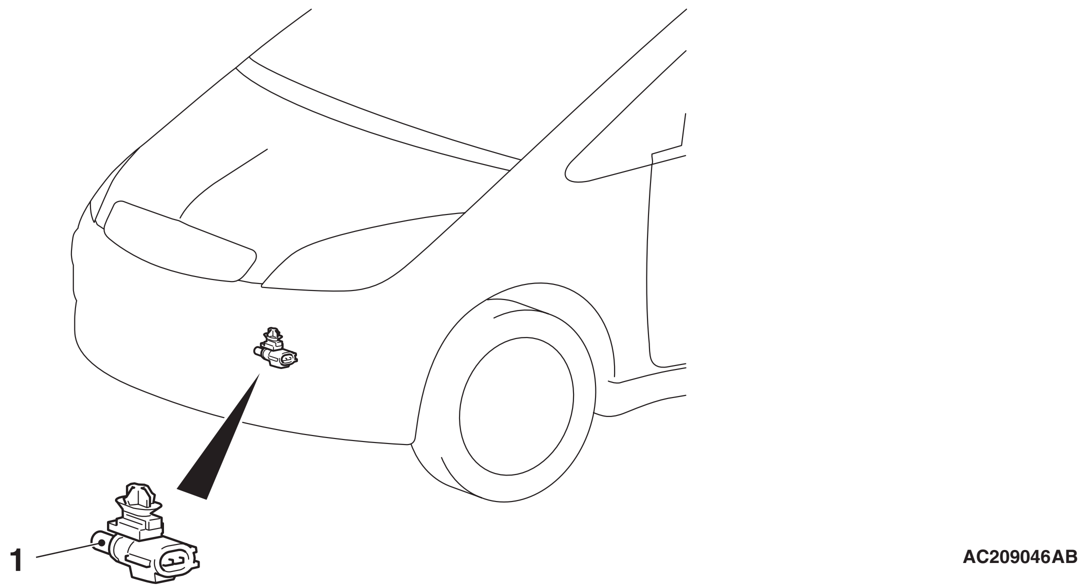
Connection (+) terminal	Connection (-) terminal	Lever operation
1	7	The rotation stops at the fresh air position
1	5	The rotation stops at the recirculation air position

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Group TOC

AMBIENT TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

M1554003400283



Removal step

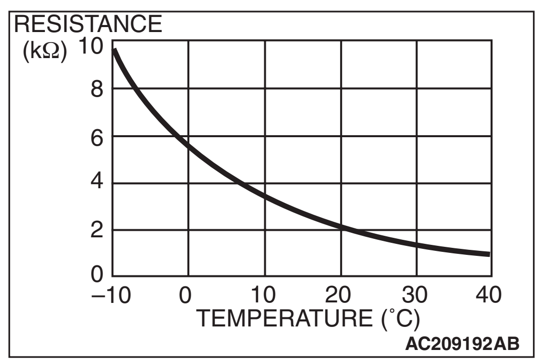
- Front bumper (Refer to GROUP 51, Front Bumper and Radiator Grille P.51-2.)

1. Ambient temperature sensor

INSPECTION

M1554003500116

AMBIENT TEMPERATURE SENSOR CHECK



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the sensor terminals under two or more different temperature conditions.

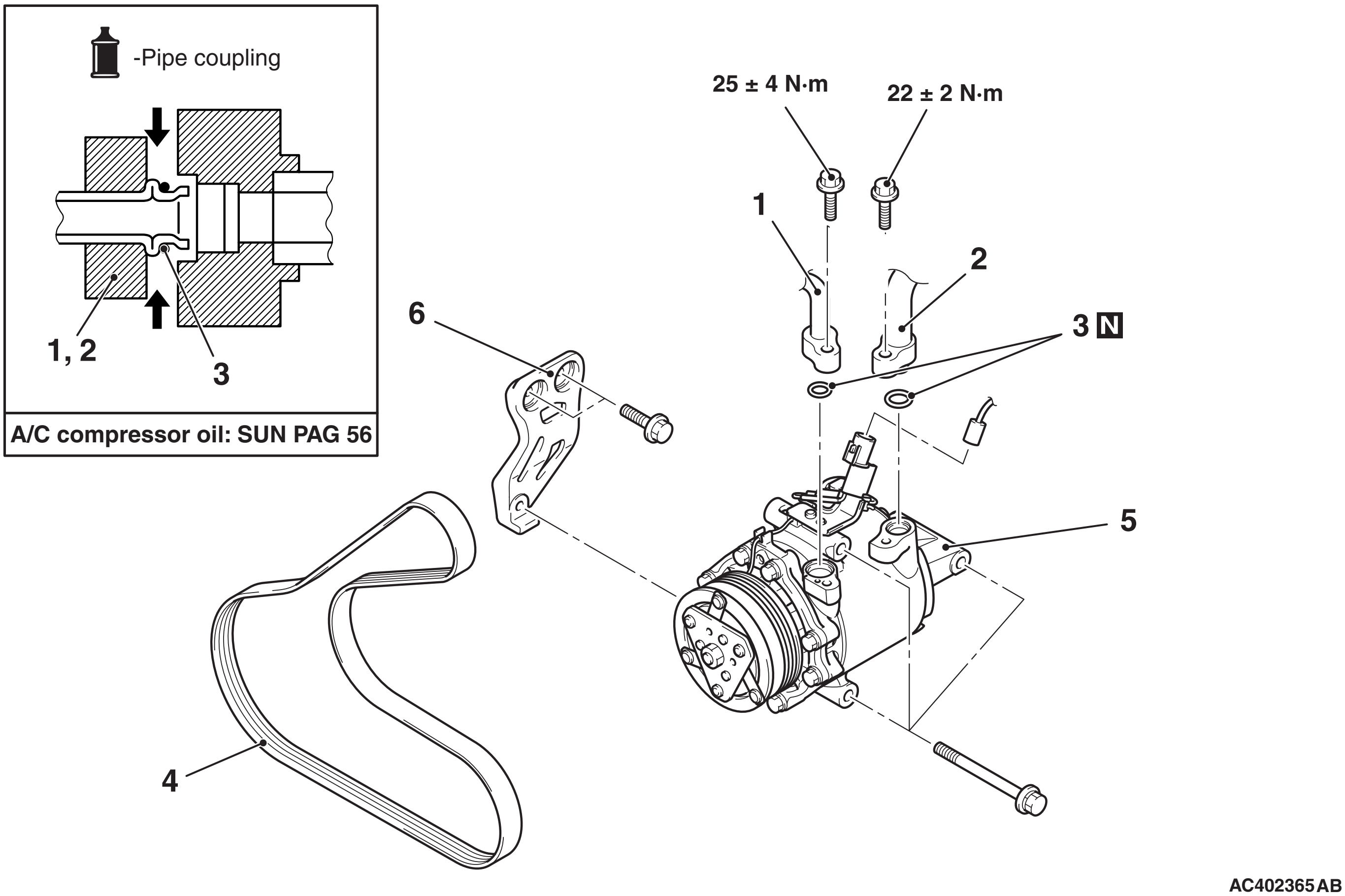
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Group TOC

COMPRESSOR ASSEMBLY

REMOVAL AND INSTALLATION <4A9>

M1552004400804

Pre-removal Operation	Post-installation Operation
• Refrigerant Discharging (Refer to P.55A-48.) • Front under cover panel assembly (Refer to GROUP 51, Front Bumper Assembly P.51-2 .)	• Refrigerant Charging (Refer to P.55A-48.) • Drive Belt Tension Adjustment (Refer to GROUP 11A, On-Vehicle Service, Drive Belt Tension Check And Adjustment P.11A-6.) • Front under cover panel assembly installation (Refer to GROUP 51, Front Bumper Assembly P.51-2 .)



		Removal steps
<<A>>	1.	Flexible suction hose connection
<<A>>	2.	Flexible discharge hose connection
	3.	O-ring
<<B>>	4.	Drive belt

			Removal steps (Continued)
<<C>>	>>A<<	5.	A/C compressor assembly
		6.	A/C compressor bracket
		7.	A/C drive belt tensioner assembly

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REMOVAL SERVICE POINTS

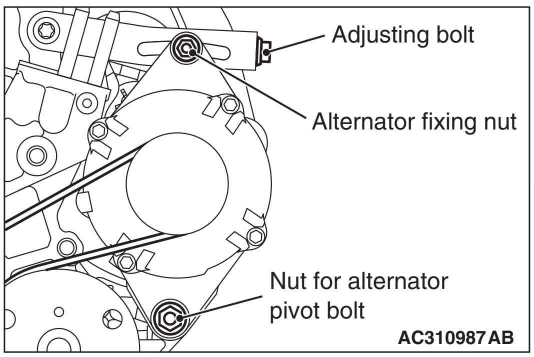
<<A>> FLEXIBLE SUCTION HOSE AND FLEXIBLE DISCHARGE HOSE DISCONNECTION

⚠ CAUTION

Use the plug which is not breathable because A/C compressor oil or receiver have high hygroscopicity.

Plug the removed nipple of the pipe, hose and expansion valve to prevent the entry of dust and dirt.

<<B>> A/C COMPRESSOR DRIVE BELT REMOVAL



1. Loosen the nut for alternator pivot bolt and alternator fixing nut.

⚠ CAUTION

To reuse the drive belt, draw an arrow indicating the rotating direction (clockwise) on the back of the belt using chalk, etc.

2. Turn the adjusting bolt in the anti-clockwise direction (to the left) to remove the drive belt.

<<C>> A/C COMPRESSOR REMOVAL

Be careful not to spill the A/C compressor oil and remove the A/C compressor.

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR INSTALLATION

When installing the new A/C compressor, install the A/C compressor after adjusting the oil volume as follows.

1. Measure the oil of A/C compressor removed.(X cm^3)
2. Drain the oil (Y cm^3) given by the following expression from a new A/C compressor, and then install the A/C compressor.

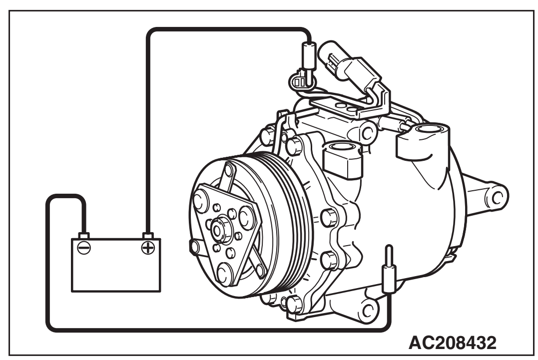
   $140\ cm^3 - X\ cm^3 = Y\ cm^3$

   NOTE:
   - *140 cm^3 shows the oil volume contained in the new A/C compressor.*
   - *Y cm^3 shows the oil volume stored in the refrigerant line, condenser, and cooling unit, etc.*

INSPECTION

M1552004500243

COMPRESSOR MAGNETIC CLUTCH OPERATION CHECK

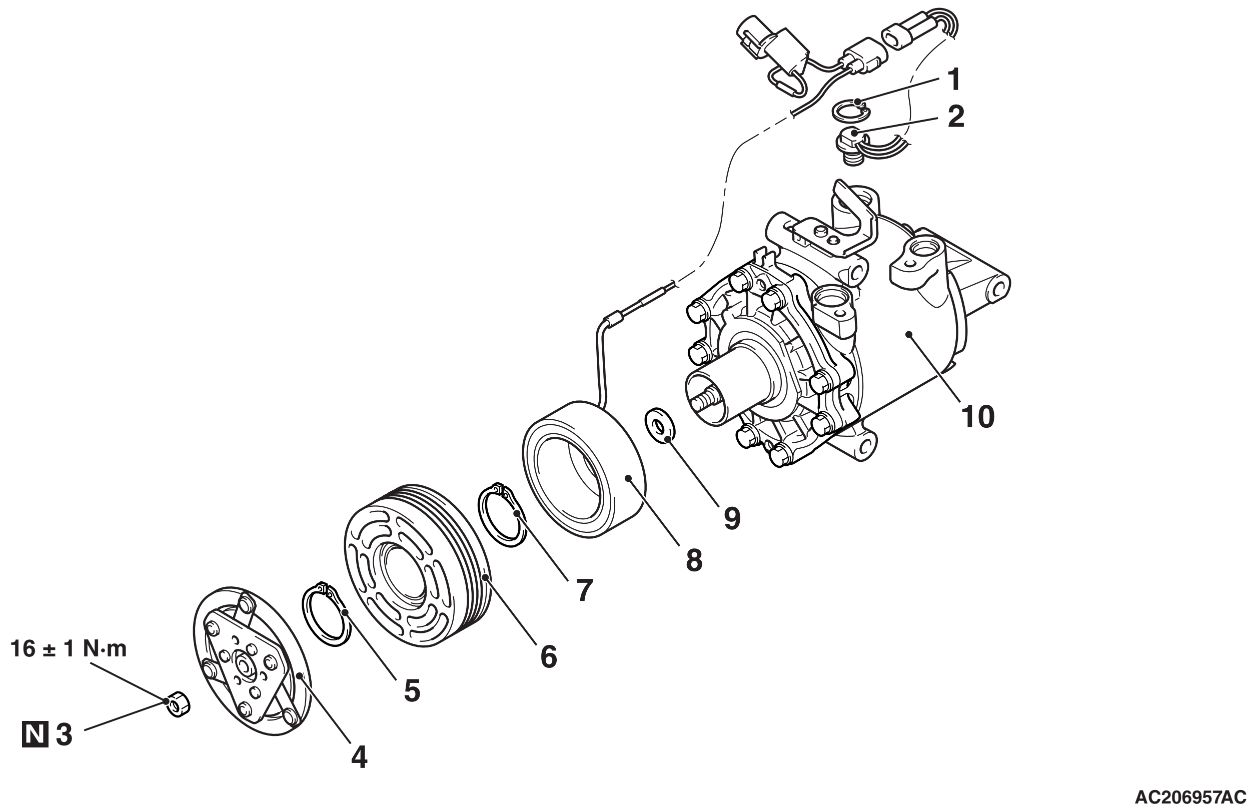


Connect the connector battery to positive battery terminal in the A/C compressor, and then earth the battery (–) terminal to the A/C compressor itself. At this time, check that the magnetic clutch operating sound can be heard.

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DISASSEMBLY AND ASSEMBLY

M1552004600682

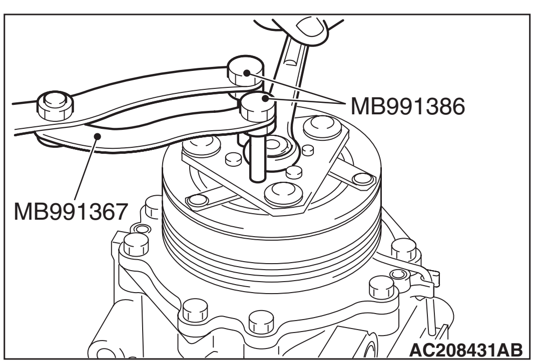


			Cooling temperature switch disassembly steps
		1.	Snap ring
		2.	Cooling temperature switch
			Magnetic clutch disassembly
	>>**D**<<	•	Air gap adjustment
<<**A**>>	>>**C**<<	3.	Self-locking nut

		Magnetic clutch disassembly
	4.	Armature
>>**B**<<	5.	Snap ring
	6.	Rotor
>>**B**<<	7.	Snap ring
>>**A**<<	8.	A/C compressor coil
	9.	Shim
	10.	A/C compressor

DISASSEMBLY SERVICE POINT

<<A>> SELF-LOCKING NUT REMOVAL



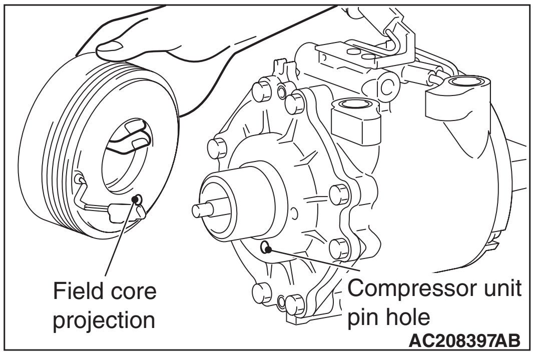
Use the special tools to remove the self-locking nut.

- Special spanner (MB991367)
- Pin (MB991386)

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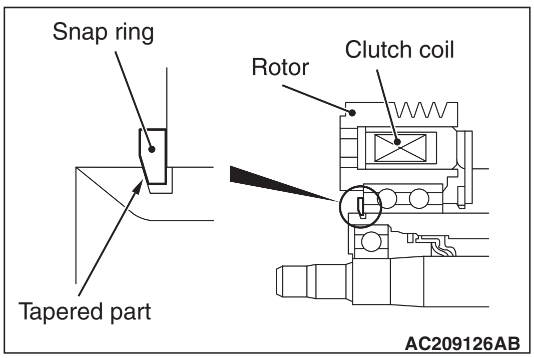
ASSEMBLY SERVICE POINTS

>>A<< A/C COMPRESSOR COIL INSTALLATION



Install the A/C compressor coil while aligning the pin hole of A/C compressor itself with the protrusion of A/C compressor coil

>>B<< SNAP RING INSTALLATION

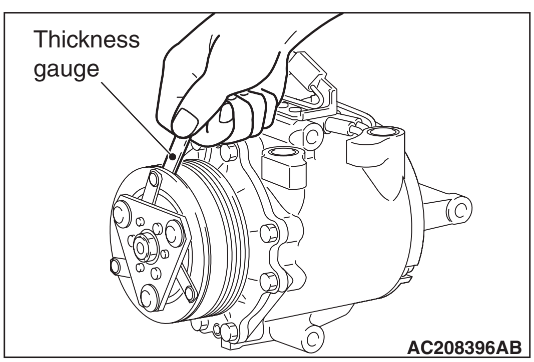


Use the snap ring plier and Install the snap ring so that the taper faces the outside.

>>C<< SELF-LOCKING NUT INSTALLATION

Use the special tool as during removal to secure the armature and tighten the self-locking nut.

>>D<< AIR GAP ADJUSTMENT



Check that the air gap of clutch satisfies the standard value. If not within the standard value, use shims to adjust it.

Standard value: 0.25 – 0.5 mm

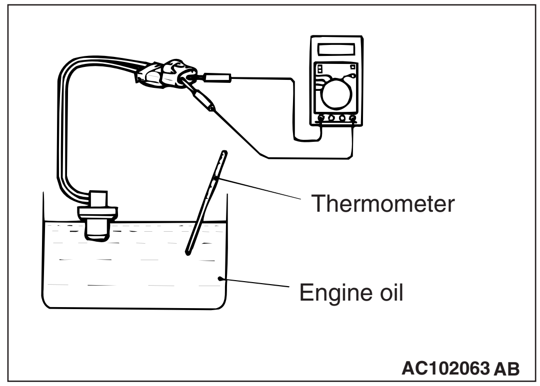
INSPECTION

M1552004700128

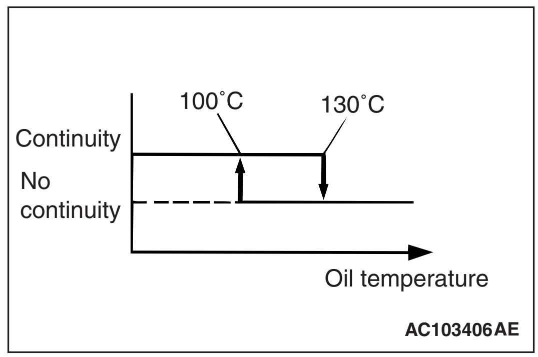
COOLING TEMPRATURE SWITCH

⚠ CAUTION

Do not heat than necessary.



1. Immerse the refrigerant temperature sensor probe into engine oil to heat the sensor probe.



2. If the oil temperature reaches the standard value, there should be continuity between the switch terminals.

Switch status	Operating temperature °C
Being turned off (No continuity)	130
Being turned on (2Ω or less)	100

NOTE: When the oil temperature is 130°C or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 100 °C or less.

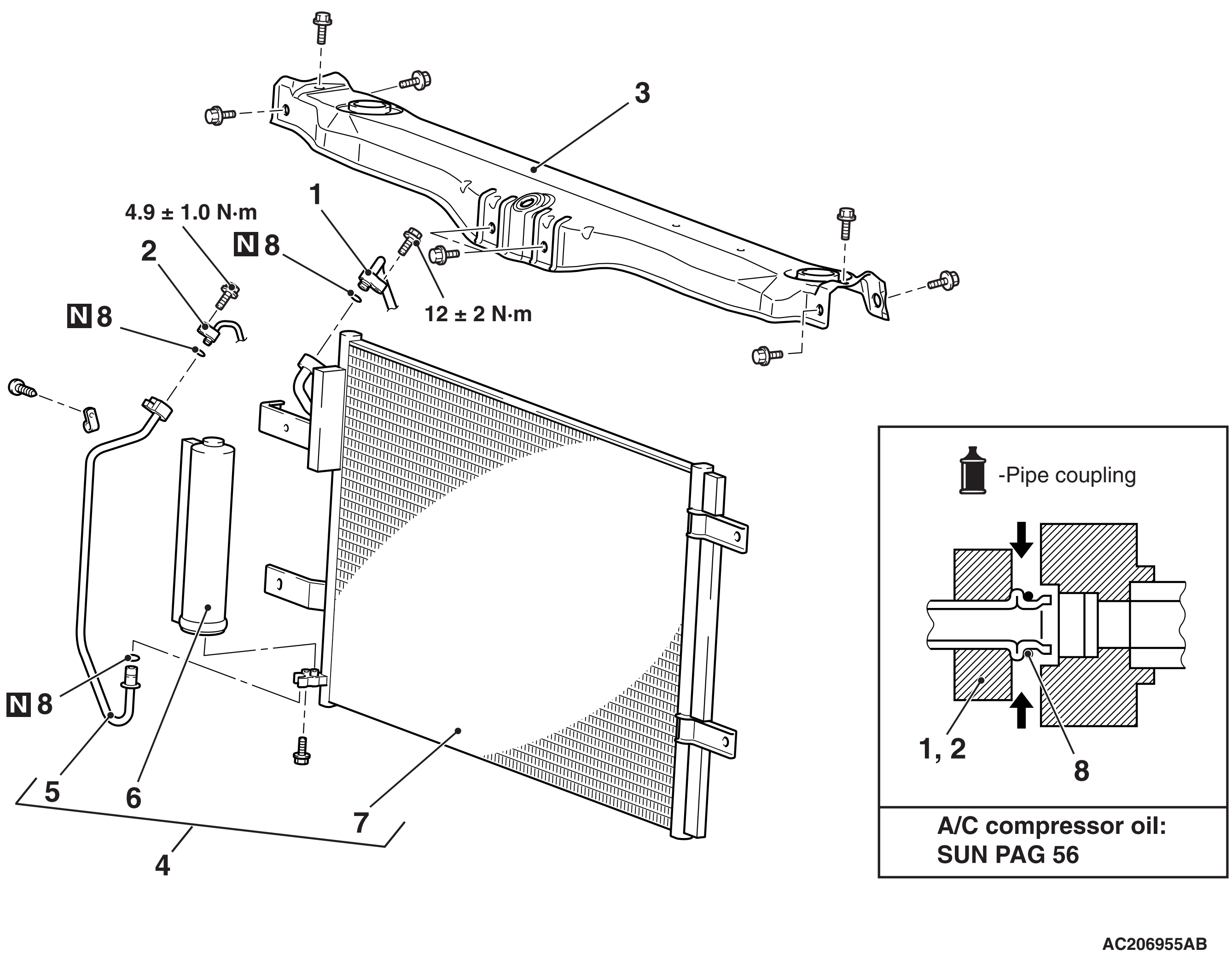
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CONDENSER ASSEMBLY

REMOVAL AND INSTALLATION

M1552015400176

Pre-removal and Post-installation Operation
Refrigerant draining and Refilling (Refer to P.55A-48and P.55A-48.)



		Removal steps
<<A>>	1.	Flexible discharge hose connection
<<A>>	2.	Liquid pipe A connection
	3.	Front end upper bar
	4.	Condenser assembly
	5.	Condenser pipe
	6.	Receiver
	7.	Condenser
	8.	O-ring

REMOVAL SERVICE POINT

<<A>> FLEXIBLE DISCHARGE HOSE AND LIQUID PIPE A DISCONNECTION

⚠ CAUTION

Use the plug which is not breathable because A/C compressor oil or receiver have high hygroscopicity.

Plug the removed nipple of the pipe, hose and expansion valve to prevent the entry of dust and dirt.

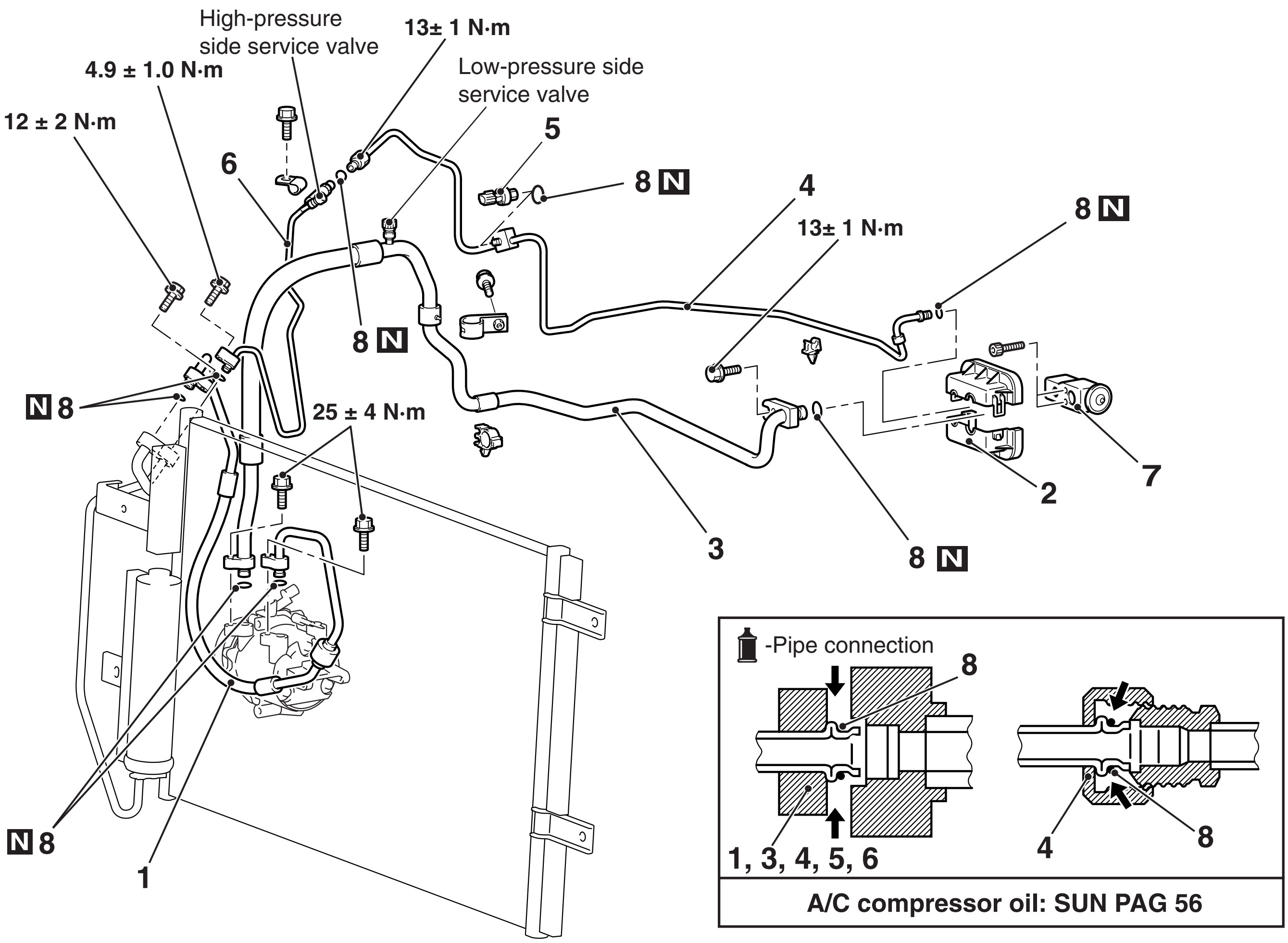
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REFRIGERANT LINE

REMOVAL AND INSTALLATION

M1552006400800

Pre-removal and Post-installation Operation
Refrigerant Draining and Refilling (Refer to P.55A-48and P.55A-48.)



AC206954AB

Removal steps

<<**A**>>	1.	Flexible discharge hose
	•	Air cleaner cover and engine air intake hose (GROUP 15, Air Cleaner P.15-5.)
	2.	Expansion valve cover
<<**A**>>	3.	Flexible suction hose
<<**A**>>	4.	Liquid pipe B
<<**A**>>	5.	A/C pressure sensor
<<**A**>>	6.	Liquid pipe A
<<**A**>>	7.	Expansion valve
	8.	O-ring

REMOVAL SERVICE POINT

<<A>> HOSE/PIPE DISCONNECTION

⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

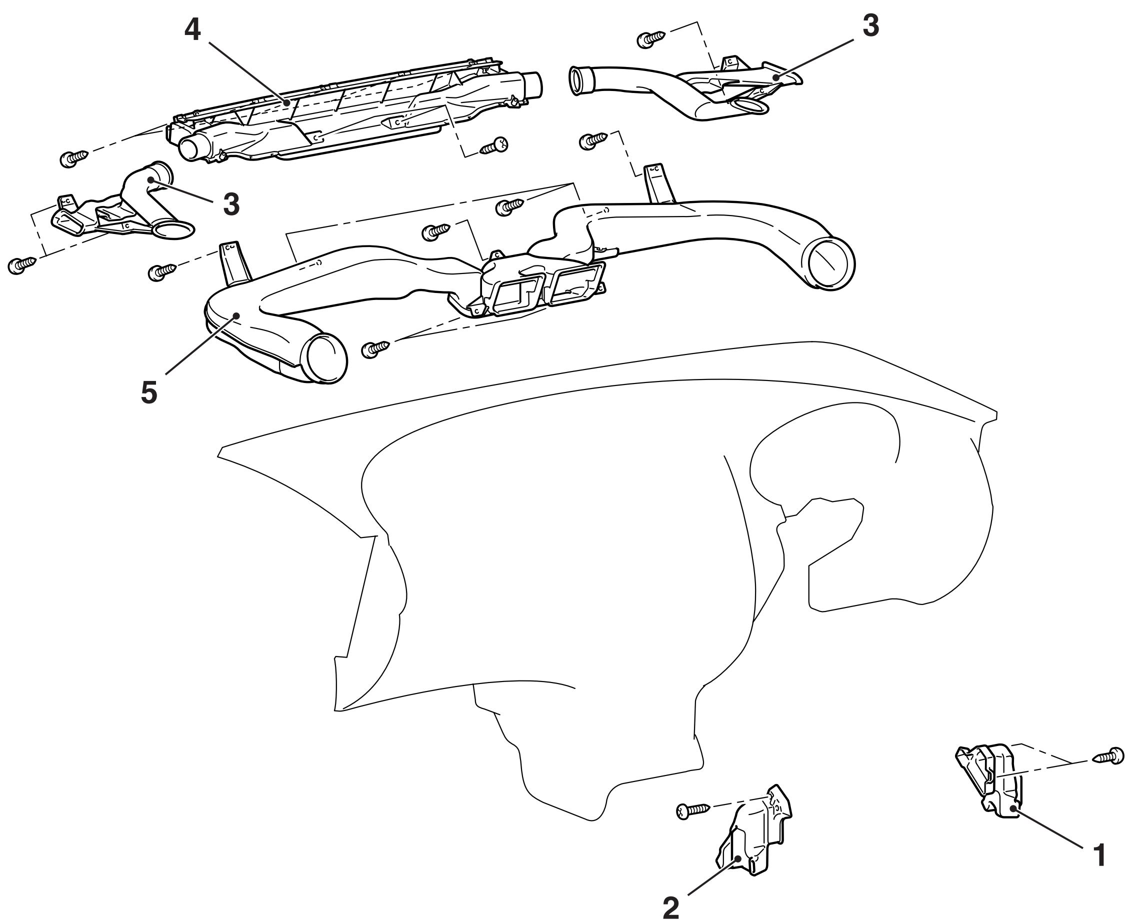
To prevent the entry of other foreign bodies, plug the condenser, compressor, and expansion valve nipples.

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DUCTS

REMOVAL AND INSTALLATION

M1553001000264



Foot heater duct removal steps

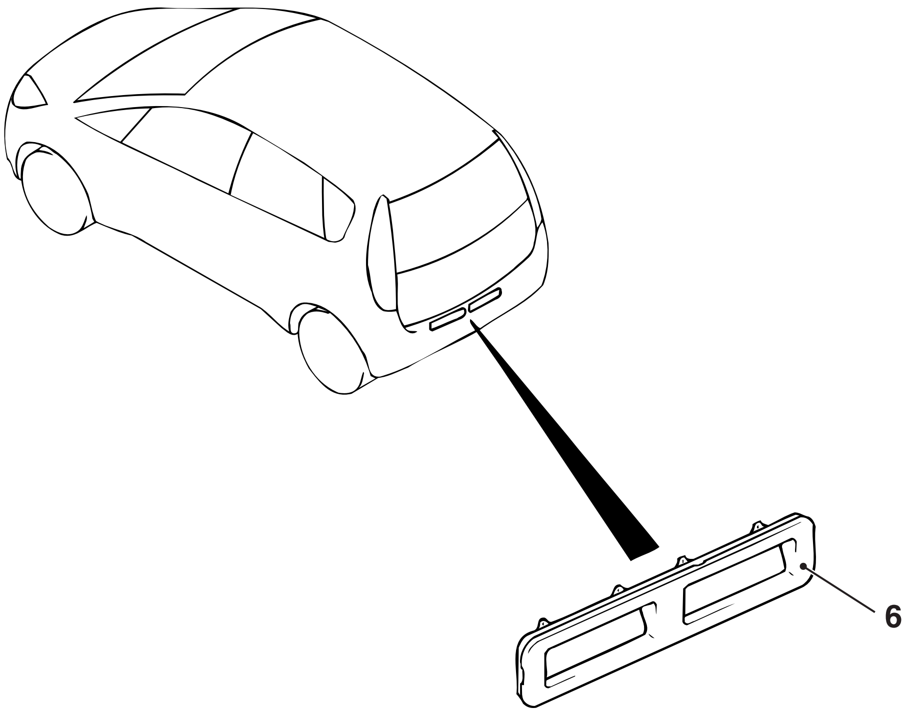
1. Foot heater duct LH
2. Foot heater duct RH

Side defroster duct, defroster nozzle and ventilation air distribution duct removal steps

- Instrument panel (Refer to GROUP 52A, Instrument Panel P.52A-3.)

3. Side defroster duct
4. Defroster nozzle
5. Ventilation air distribution duct

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AC208650AB

Rear ventilation duct removal step

- Rear bumper (Refer to GROUP 51, Rear Bumper P.51-7.)

6. Rear ventilation duct